URDPFI guideline for parks and recreation spaces

The provision of socio- cultural facilities shall correspond to the changing urban demography and work life style.

TABLE NO-49
Norms For Socio- Cultural Facilities

Sl.No	Category	Population Served per unit	Land Area Requirement (Sq.m)
1	Aganwadi- Housing area / Cluster	5000	200-300
2	Community Room	5000	750
3	Community hall / Marriage hall/ Library	15000	2000
4	Music, dance and drama centre	1 Lakh	1000

TABLE NO-50
Norms For Recreational Facilities

Sl.No	Category	Population Served per unit	Area Requirement (Ha)
1	Housing Area Park	5000	0.50
2	Neighbourhood Park	15000	1.00
3	Community Park	1 Lakh	5.00

TABLE NO-51
Norms For Sports Facilities

Sl.No.	Category	Population Served per unit	Area Requirement (Sq. M)
1	Residential unit play Area	5000	5000
2	Neighbourhood Play Area	15000	1.5
3	Town sports centre	1 Lakh	8.00

7.7 Beautification of Major Transit Zone

Tinsukia has emerged as a major transit zone for tea, iron & steel, electrical appliances, vegetables, etc. Tea of Tinsukia transit to all over India. So, it is very much essential to beautify and upgrade the major traffic points like bus stand, railway station, market area of this emerging transit zone of upper Assam.

7.8 Road Signage and Street Furniture

Road signs are signs erected at the side of or above roads to give instruction or provide information to road uses. The earliest signs were simple wooden or some milestones. But in course of time, many states of India have been adopting pictorial signs or otherwise simplified and standardized their signs to overcome language barriers and enhance traffic safety, such pictorial signs use symbols in place of words.

Street furniture is a collective term for objects and pieces of equipment installed on streets and roads for various purposes. It included Benches, traffic barriers ,bollards post boxes phone boxes, street lamps, traffic lights, traffic signs, bus stops, taxi stand, public lavatories fountains, public sculptures and waste receptacles an important consideration in the design of street furniture is how it affects road safety. Road signs and furnitures are inadequate, not predominantly visible.

The plan suggests the authority concern to take steps for the installation of warning, priority, prohibitory, mandatory, information, facilities, service, direction, position and indication signs in the roads of Tinsukia town, so that local people as well as outsiders can be benefitted and road safety can be maintained.

Further, master plan area doesnot have visible street furniture for the public. The concern authority should take steps for the construction of public lavatories at important public places and installation of benches in the park and public places, post boxes, bus stop, taxi stand, waste collectors etc. in addition to the existing ones.

This plan recommends for preparation and execution of a city beautification plan covering street light, traffic signal etc. that will enhance the beauty of this resource full town.

Road signage

Street furniture

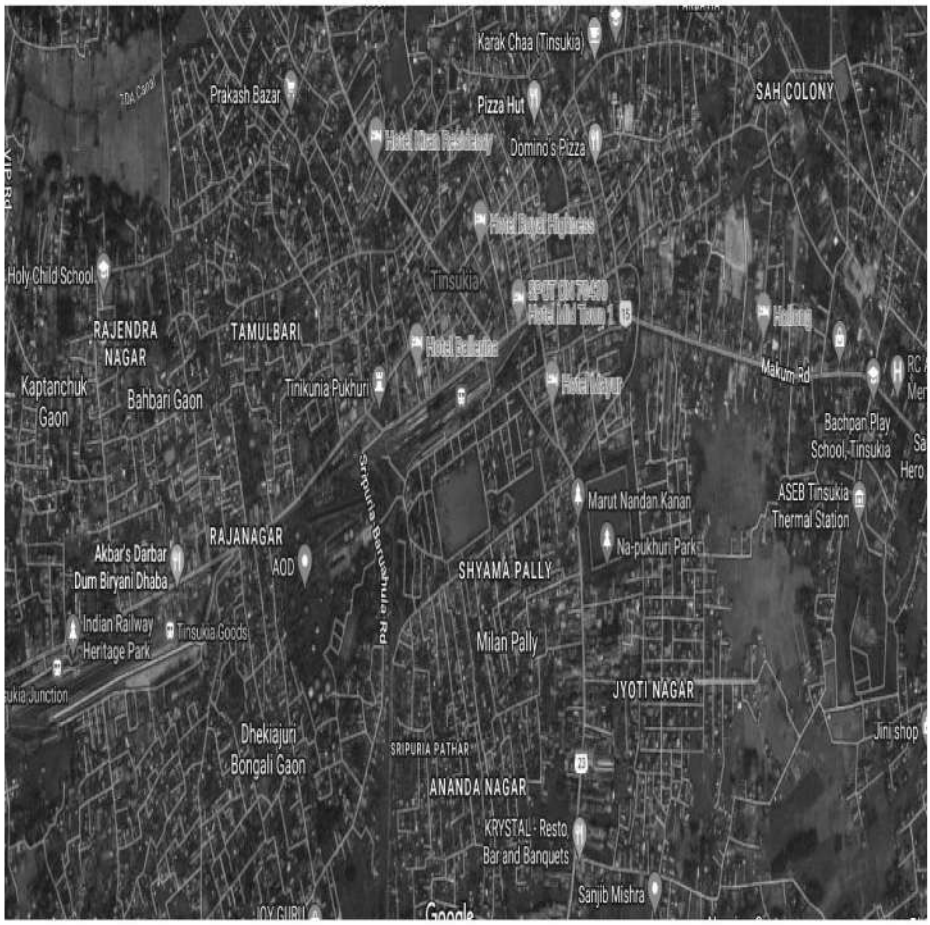
CHAPTER -8

8. LAND USE PLAN

8.1 Developable and Non – Developable Area of the Master Plan

Urban growth and development is often conditioned by the natural landscape like hills, water bodies, forests and manmade impediments like railway line, major roads & canals etc. It is also conditioned by the resources and technology employed in overcoming the impediments and constraints.

Existing Tinsukia master plan covers only flat land. Except railway track towards Makum and Duliajan, passing through the heart of the town that creates heavy traffic congestion, there is no other physical feature acting as a constraint for development. The soil is very fertile and tea gardens is observed in the region.



The quality of urban life and its functional efficiencies are governed by its land-use pattern. In order to understand and analyse systematically the functional relationship between various uses particularly the place of living, business place, industrial activity, education, recreation, agricultural activity etc., a detail land-use survey was conducted during the year 2021-22 to estimate the present and future need of the urban area as well as master plan area. Tinsukia master plan covers an area of 13065 hectare (130.65 Sq.km), out of which developed area is 4017.88 hectare (40.18 sq.km.) i.e. 30.75 % of the total plan area and non-developed area is 9047.12 hectare (90.47 sq.km.) i.e. 69.25 % of the total plan area.

8.2 Existing Land Use

The existing land use and the areas occupied by each use in Tinsukia master plan area is shown in the following table

TABLE NO-52

Existing Land Use - Tinsukia Master Plan Area In 2021-22

Use	Tinsukia Master Plan Area in hectare	Percentage of the Tinsukia Master Plan Area (%)	Percentage of the total developed Area (%)
Residential	2726.62	20.87	67.86
Commercial	247.78	1.90	6.17
Industrial	256.12	1.96	6.37
Public & Semi Public	255.89	1.96	6.37
Recreation	87.69	0.67	2.18
Circulation	110.37	0.84	2.75
Railways	235.85	1.81	5.87
Defence	97.56	0.75	2.43
Total developed area	**4017.88**	**30.75**	**100**
Agriculture	6033.95	46.18	-
Tea Estate	2300.67	17.61	-
Green Belt	12.91	0.10	
Open Space	125.68	0.96	
Water Bodies	209.22	1.60	
Forest	364.69	2.79	
Total Un Developed Area	**9047.12**	**69.25**	
Grand Total Plan Area	**13065.00**	**100.00**	

Source: - Town & Country Planning, Dibrugarh Land Use Survey 2021-22.

Figure-33

Existing Land Use - Tinsukia Master Plan Area In 2021-22

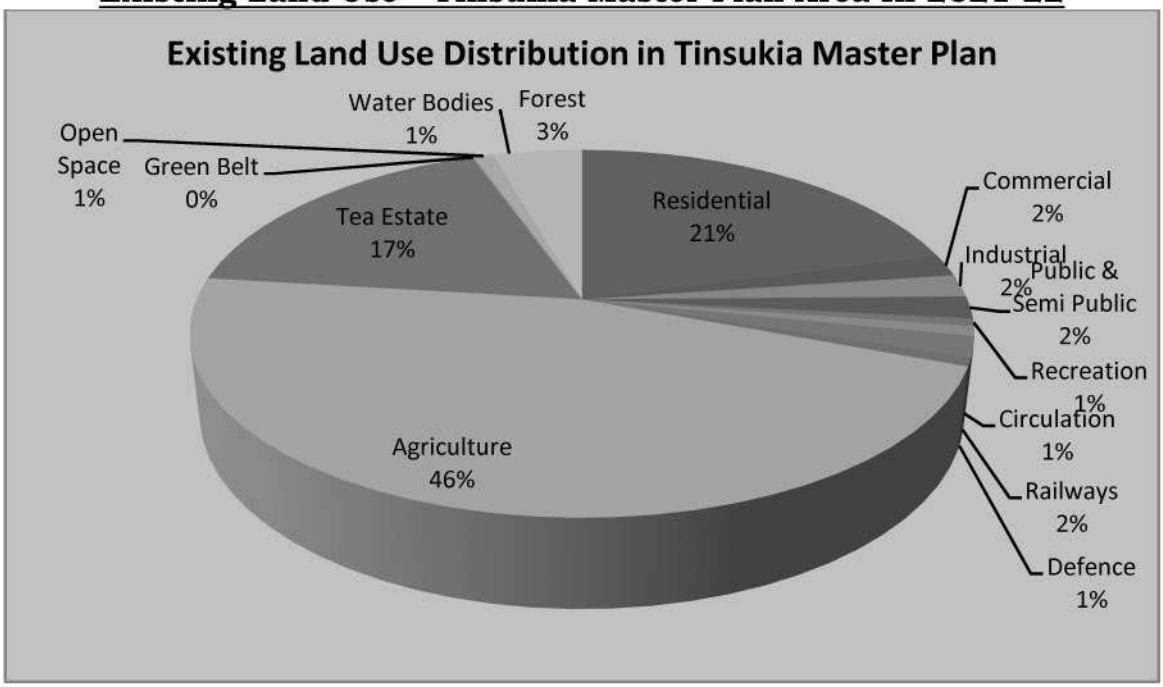
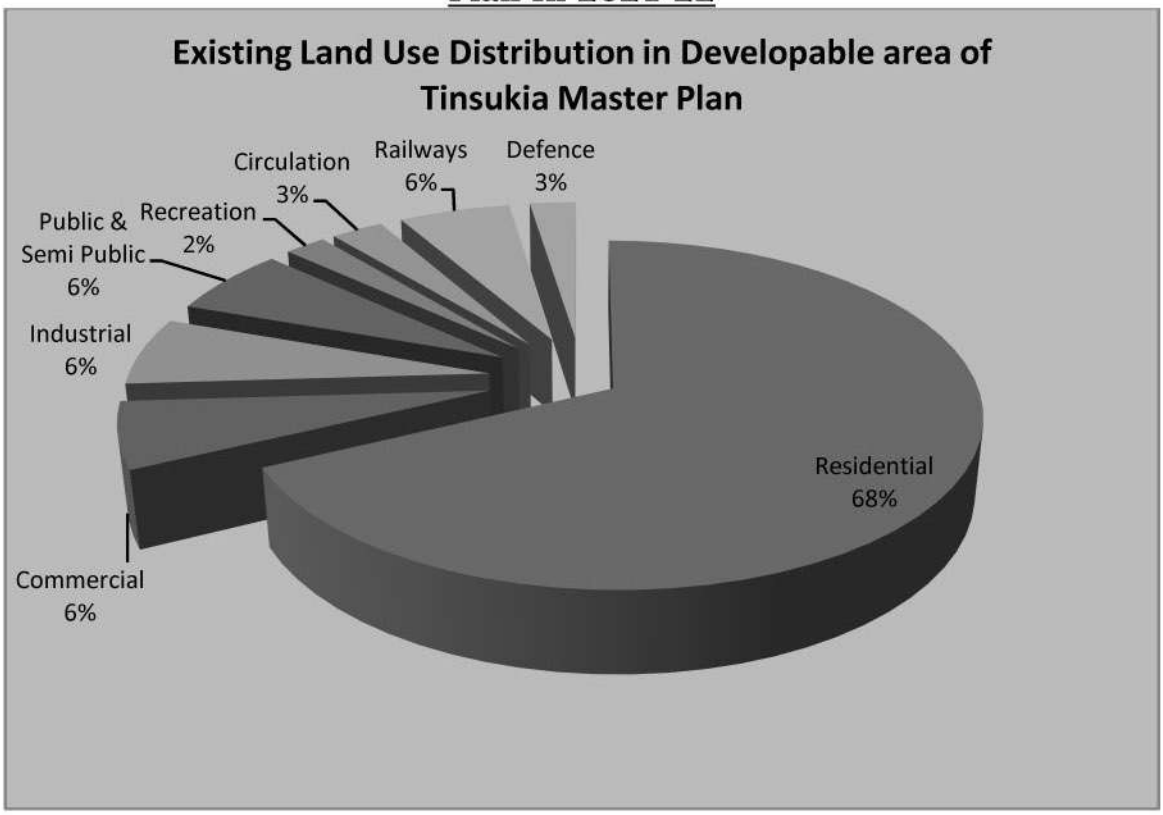


Figure-34

Existing Land Use Distribution In Developable Area of Tinsukia Master Plan In 2021-22



In Tinsukia master plan area, 2726.62 hectare of land i.e. 20.87% of total master plan area or 67.86% of the total developed area, is used for residential purposes. New residential areas have been developed in the last

few years at Jyoti nagar, Napukhuri, Ward No-4 & TS No-14, Bordoloi nagar & Ward No-8.

In TMPA, 247.78 hectare of land i.e. 1.90% of total master plan area or 6.17% of the total developed area is used for commercial and business purposes. The business area in Tinsukia is spread all over the town. The main market places are situated at GNB road, NH-15, Rangagora road and Chriwapotty. Vegetable and fruit market located at Thana road, Ward No-12.,in a compact manner. Wholesale grocery market is located at Chamba road, Siding Bazar, Ward No-11. The roads being narrow, no provision of parking area in market places and on road parking of all types of vehicles including commercial vehicles at all the market places create traffic congestion in the market area.

In TMPA, 256.12 hectare of land i.e. 1.96% of total master plan area or 6.37% of the total developed area is used for industrial purposes.

The land use for Public and Semi-public purposes including educational institutions, government offices, health care etc. are 255.89 hectare, i.e. 1.96% of total master plan area or 6.37% of the total developed area is used for industrial purposes. The land uses under this had is scattered all over the master plan area.

In TMPA, 87.69 hectare of land i.e. 0.67% of total master plan area or 2.18% of the total developed area is used for recreational purposes. Out of this a major portion has been used as Sarbananda Singha stadium, Kachujan field, Marut Nandan Kanan park and Napukhuri. Besides these, there are other open spaces which fulfil the recreational activity of the people of Tinsukia.

Transportation & circulation network of a town or planning area plays an important role and affects immensely the economic and socio cultural life of the planning area. A well-developed road network can provide answer to many problems of urban life. Accordingly in TMPA, the land use for circulation purposes is 110.37 hectare, i.e. 0.84% of total master plan area or 2.75% of the total developed area.

Railways occupy an area of 235.85 hectare of land i.e. 1.81% of total master plan area or 5.87% of the total developed area. The railway track is passing all along through the master plan area from Panitola gaon to Hukanpukhuri 37/73 NLR. The Tinsukia railway station is situated within the heart of the town and New-Tinsukia railway junction is situated in Hijuguri area.

In TMPA, Defence occupy an area of 97.56 hectare of land i.e. 0.75% of total master plan area or 2.43% of the total developed area.

In TMPA, land use for agricultural purposes is 6033.95 hectare i.e 46.18% of the total master plan area. Agricultural activities are mainly takes place in Gelapukhuri, Bojaltoli gaon, Kadomoni gaon, Nokhroi, Nunpuria

Bongali gaon, Okonimuria Bongali gaon, Lezaihula gaon, Chikajan, Ahukhat, Chandmari, Bhimpara etc.

In the planning area, tea estate occupies 2300.67 hectare i.e. 17.61% of the total master plan area. There are 15 (fifteen) tea gardens situated all over the master plan area.

Green belt covers an area of 12.91 hectare hectare i.e. 0.10% of the total master plan area.

Open space constitute an area of 125.68 hectare i.e. 0.96% of the total master plan area. Small size open space area is scattered all over the municipal area as well as master plan area. There are 4 (four) big block of open space has been seen in Lohari Kachari gaon, near Citrous Research Station, near Police Reserve and in Norsing gaon.

Water bodies constitute an area of 209.22 hectare i.e. 1.60% of the total master plan area. The major constituent of water bodies in the land-use are Tingrai river and TDA drain.

Forest land constitutes an area of 364.69 hectare i.e. 2.79% of the total master plan area. The entire forest land in the land-use occupied by Borjan-Bherjan reserve forest.

8.3 Proposed Land use:

Land use planning has a bearing on the expansion of the town and put pressure on outer growth area and in rural areas. A change in urban economic function changes its population growth. The decision to set up administrative block, commercial activities, industrial estate, educational institution, health care as well as any government policy to stimulate the urban economy accounts for population growth as well as create opportunities for employment and business expansion.

The proposed Tinsukia master plan covers an area of 13065 hectare (130.65 Sq.km.) out of which about 7227.58 hectare (72.27 Sq. Km.) i.e. 55.32% of total master plan area is proposed to be developed up to the year 2041 for a projected population of 489854 persons.

The following table shows the proposed distribution of land use in Tinsukia master plan area up to 2041.

TABLE NO–53
Proposed Land Use - Tinsukia Master Plan Area Up To 2041.

Use	Tinsukia Master Plan Area in hectare	Percentage of the Tinsukia Master Plan Area (%)	Percentage of the total developed Area (%)
Residential	4300.66	32.92	59.50
Commercial	480.36	3.68	6.65
Industrial	510.12	3.90	7.06
Public & Semi Public	450.56	3.45	6.23
Open space zone / Recreation	649.59	4.97	8.99
Circulation	502.88	3.85	6.96
Railways	235.85	1.81	3.26
Defence	97.56	0.75	1.35
Total developed area	**7227.58**	**55.32**	**100.00**
Agriculture	3020.02	23.12	-
Tea Estate	2200.58	16.84	-
Green Belt	42.91	0.33	-
Water Bodies	209.22	1.60	-
Forest	364.69	2.79	-
Total Un Developed Area	**5837.42**	**44.68**	**-**
Grand Total Plan Area	**13065.00**	**100.00**	**-**

Source: - Town & Country Planning, Dibrugarh Land Use Survey 2017.

Figure-35
Proposed land use distribution in Tinsukia master plan area up to 2041

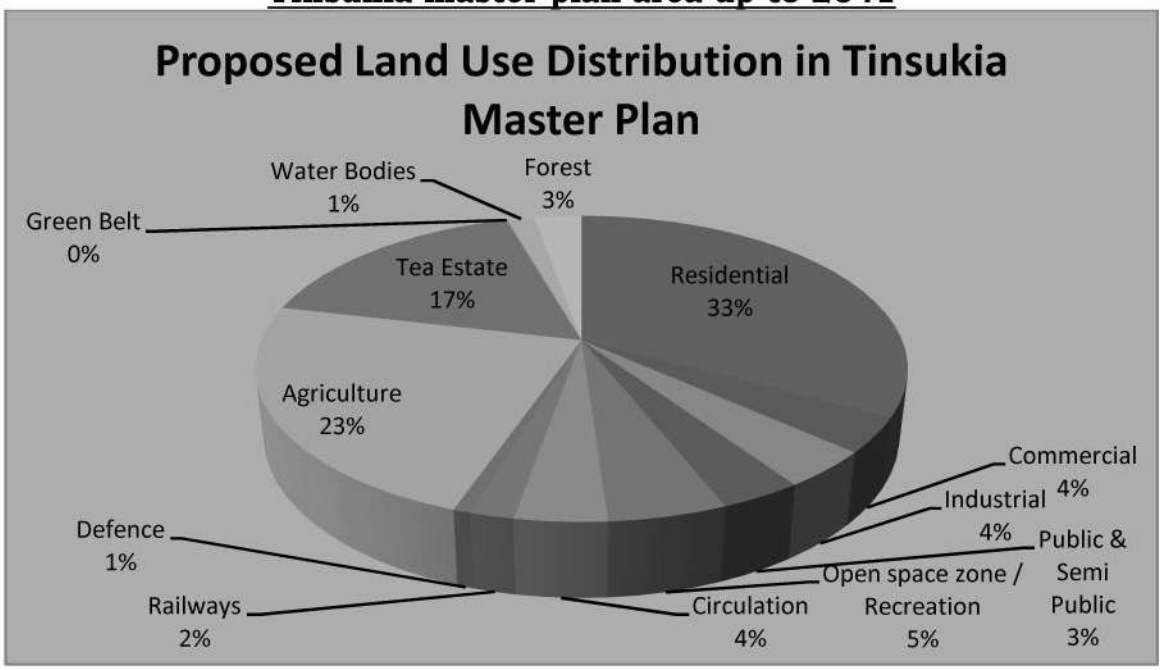
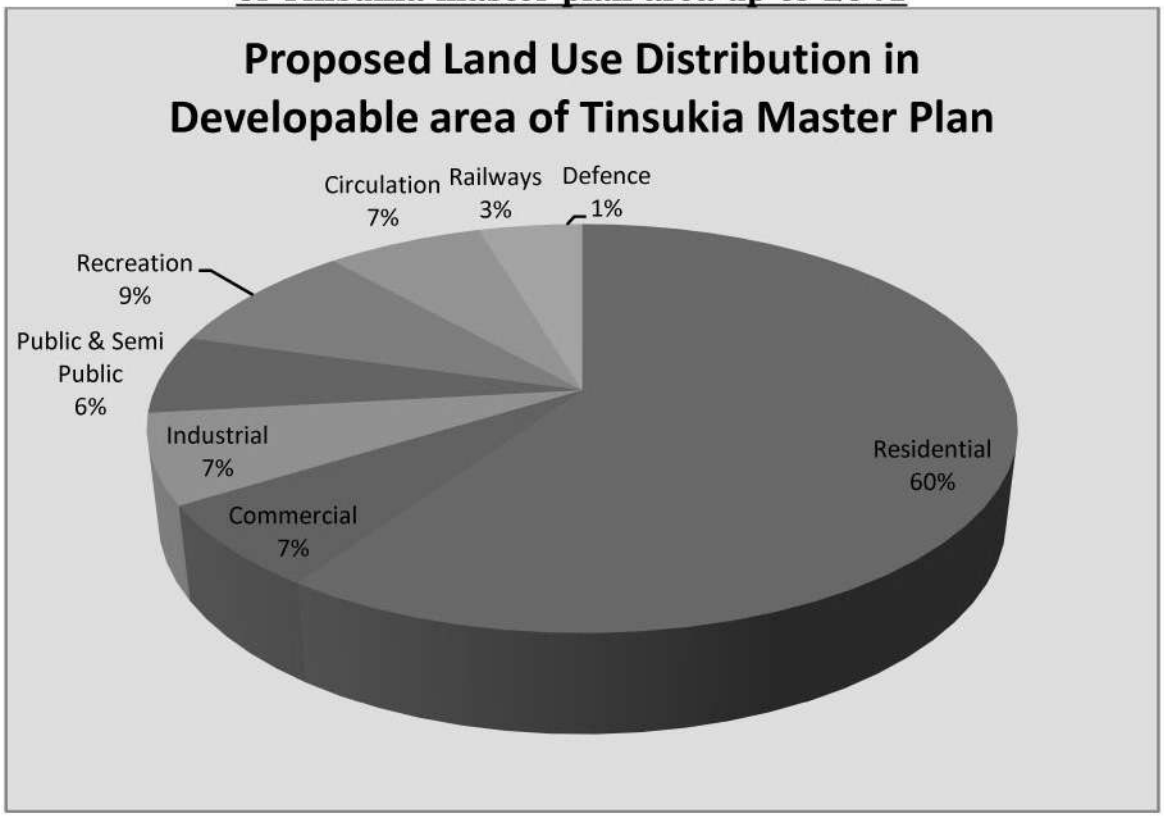


Figure-36
Proposed land use distribution in developable area of Tinsukia master plan area up to 2041



An area of 4300.66 hectare i.e. 32.92% of the total master plan area or 59.50% of the total developed area has been earmarked for residential use for projected population of 489854 persons of master plan area up to the year 2041. It is presumed that a part of the total projected population will be residing in the mixed used areas. In the proposed land use plan, the population density of the master plan area in the year 2041 will be 3749 persons per sq.km. The residential density of master plan area for the year 2041 will be 21 dwelling unit per hectare. The following gross residential density is recommended in the plan:-

1. Low density : up to 75 persons per hectare
2. Medium density : 75 - 150 persons per hectare
3. High density : 150 - 250 persons per hectare

Land earmarked for commercial activities is 480.36 hectare i.e. 3.68% of the master plan area or 6.65% of the total developed area. In the plan new commercial activities has been proposed along the road side of Tinsukia-Makum Bypass and along the side of major roads. In the plan a ware house has been proposed at Tinsukia-Makum Bypass.

Land earmarked for industrial activities is 510.12 hectare i.e. 3.90 % of the master plan area or 7.06% of the total developed area. In the plan industrial area has been proposed at Nunpuria koiborta gaon, Gahoripam gaon, Kukurekhowa gaon, Ukonimuria kachari gaon, Nokhroi Gaon, 1 No. Potia pathar, Pakharijan gaon, covering an area of 254 hectare. In the plan Solid Waste Management site has been proposed at the present dumping site located near LBT road, No.2 Potia Pathar at Tinsukia-Duliajan road covering an area of 36 Bighas.

In the plan the land earmarked for Public and Semi-public activities is 450.56 hectare i.e. 3.45% of the master plan area or 6.23% of the total developed area for establishing Govt. offices, education institution, health services etc. for the growing population. An administrative block has been proposed at the present site of DC office, Tinsukia for all Govt. offices under one roof.

In the plan to meet the demand of growing population, the area earmarked for recreation facilities has also been increased to 649.59 hectare i.e. 4.97% of the master plan area or 8.99% of the total developed area for establishing parks, outdoor and indoor game facilities and socio-cultural institutions.

In the proposed land use plan, the land earmarked for circulation is 502.88 hectare i.e. 3.85% of the master plan area or 6.96% of the total developed area. In the plan new roads has been proposed to link up the sub-

arterial and other road to arterial road. Besides for the efficiency of circulation pattern, ISBT, taxi stand and truck terminus has also been proposed in the plan.

In the proposed land use plan, an area of 42.91 hectare i.e. 0.33% of the master plan area has been earmarked for Green Belt. The proposed green belt area has been shown in the proposed Land-Use map on Tinsukia-Makum Bypass road.

8.4 Composite Zones /Mixed Zones

With increased urbanization, the demand for housing increased manifold. As such, this plan proposes a Residential Land Development Scheme/Neighbourhood Centre at 2 (two) locations viz. (i) Hukapukhuri TE Pattaland and (ii) Kaptainchuk, Himoruguria gaon and Gahoripam gaon to accommodate 1500 persons or 300 households in each RLDS locations. The development of this new residential area should be done on the basis of micro/block level planning where all urban problems will be mitigated. The block will covered by small play field with parks for providing recreational facilities to the children of the block. Other facilities included in the scheme are such as 24 hour's electricity and water supply well equipped drainage facilities neighbourhood shopping centre, first aid facilities and provision of kindergarten school.

The land used for Administrative purposes within Tinsukia Municipal Board area is deficient. The existing land area of school and colleges are also for behind the norms. So, this plan suggest to Authority concern to set up an Administrative Block at a suitable available Govt. land within the master plan area so that people's harassment are reduced to some extent. In the same way this plan also suggests to increase the land area of school and colleges to reduce the utilization rate by allowing mixed growth.

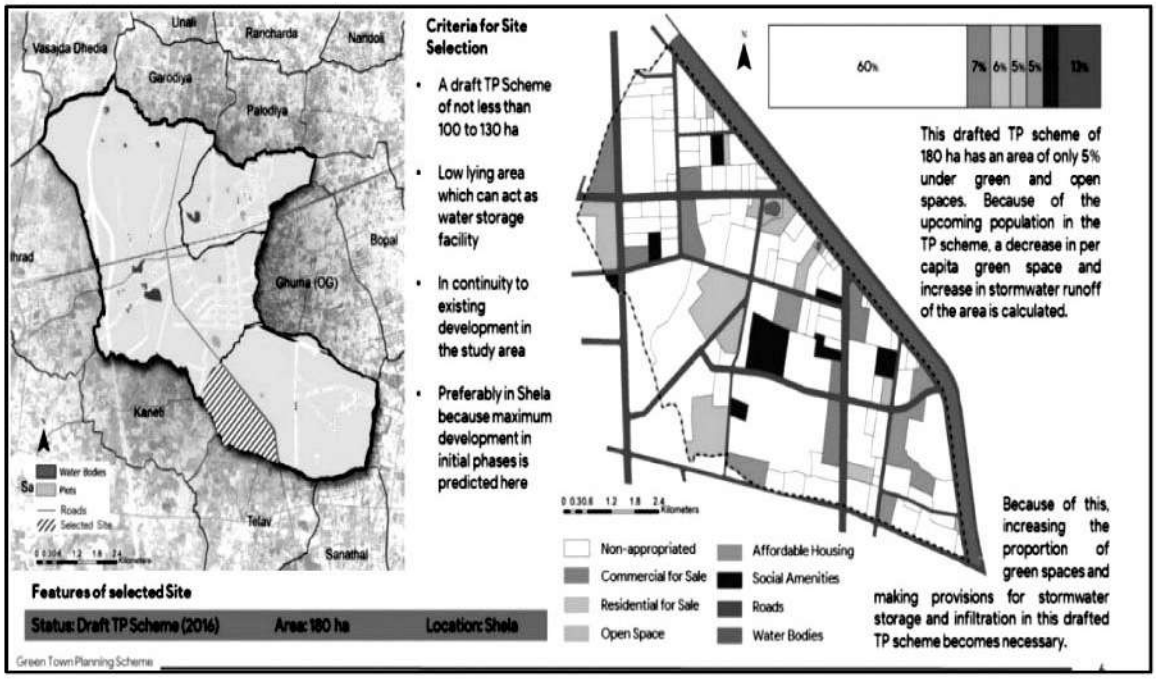
CHAPTER - 9

9. Proposed Project, Brief and Tentative Funding Source

9.1 Identify Priority Sectors and Project

The plan proposals for Tinsukia Master Plan Area spread up to 2041. It is quite obvious that the natural development will continue and the private developers will play an important role in this respect. However, the private development is encouraged in conformity with the master plan. It is strongly recommended to stop unplanned and sporadic developments but to encourage balance planned and sustainable development where the provision for necessary physical infrastructure and socio-economic amenities are economically made possible. While accesing the future requirement due emphasis is given for upliftment for both urban and rural economy in addition to the provisions of physical and social infrastructure.There are some immediate necessities as pointed out by the various stake holders, which are to be taken up as priority schemes for the master plan area as listed below:

1. Planned Residential Neighbourhood through Town Planning Scheme:- Tinsukia is a dynamic, commercially and industrially vibrant growing town having direct access to South-Asian countries if Govt. of India desires to open Still Well Road. It has got immense possibilities of creating employment, generating revenues and becoming one of the most developed districts in the country considering the availability of various resources in the master plan area and its vicinity. Originally the town was not planned, as such, whatever development took place are not very systematic and creates problems to its residents. Moreover, there is no



sufficient infrastructure to accommodate the ever increasing needs of its region, as such the master plan recommendsPlanned Residential Neighbourhood with State of Art facilities using cutting edge innovation and new age technology through TPS scheme for the future generation.It will also enhance the overall landscape of this urban agglomeration.

Proper implementation of Planned Residential Neighbourhood shall not only decongest the town, but also reduce pollution, accidents for the existing population and also provide a world class locality to reside in. Further this will boost the development process of this region and also provide **multiple opportunities for employment leading towards an engine of economic growth.**

2. Smart City :- The purpose of the Smart Cities Mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes. Accordingly, the plan recommends to include Tinsukia under Smart City Mission.

3. Shifting of a portion of railway track from IOC Railway crossing to Makum railway junction.

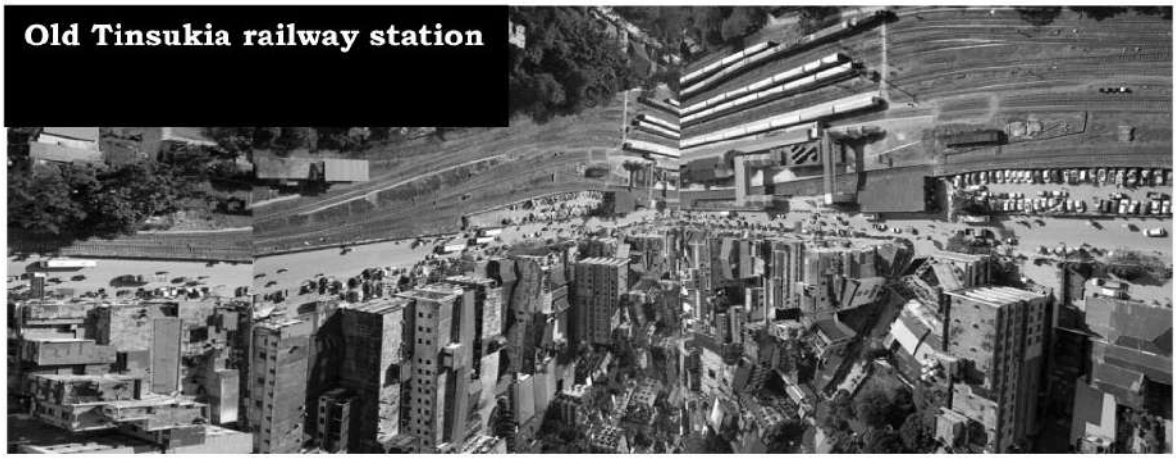
Tinsukia is a commercially and industrially vibrant town and a good place to live in due to its scenic beauty and diverse socio-cultural activities. The town was connected by the Indian Railways somewhere in the year 1883/1884.

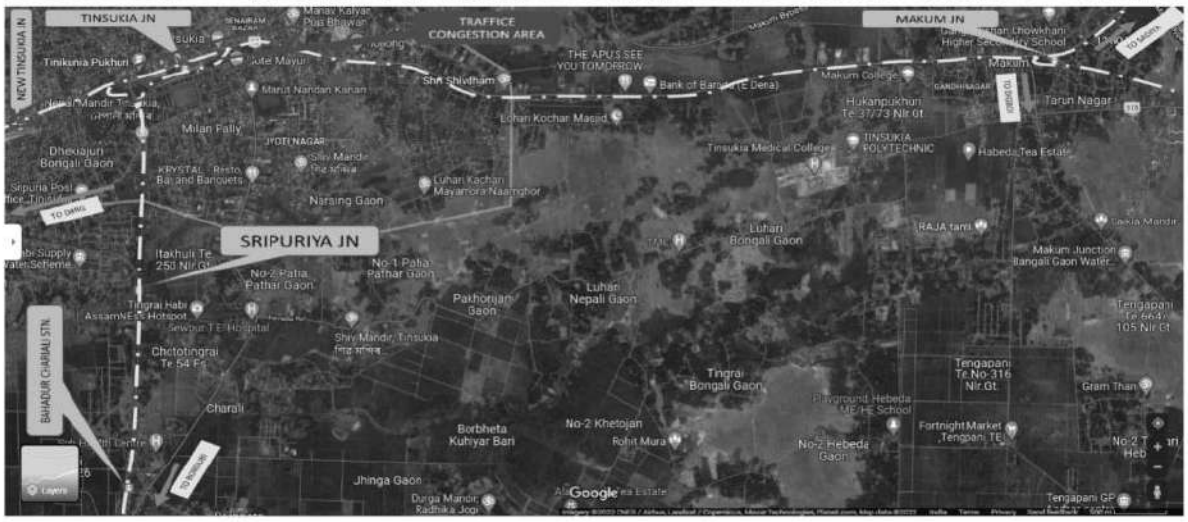
The railway track is passing through the heart of the town dividing the town into two parts. Tinsukia was declared as a municipal town in the year 1918 and in last 100 years, it has developed manyfolds in its urban and semi-urban areas including existing 15 wards of municipality, 2 census towns and 5 outgrowth villages. Out of aforesaid 15 wards, 5 wards are situated on the southern side of railway track.

Due to the growth of industrial, commercial and residential activities on both sides of the railway track towards northern and southern directions, a large number of population have to cross the railway track daily at several manned and unmanned railway crossings along with loaded trucks, car, rickshaw, etc. and the closing of railway gates has resulted to various inconviniences to the public at large and economic loss of the nation.

Considering the above and the likely growth pattern of Tinsukia master plan area upto 2041, the plan proposes to take necessary measures **to shifta portion of railway track from IOC Railway crossing to Makum railway junctionand construct a new railway track connecting Bahadur chariali**

to Makum junction. This plan also proposes to conserve Tinsukia Jn. as heritage building because it reflects the beginning of railway in this region in the decade of 1880- 1890.





4. Shifting of existing ASTC bus station – AT road /NH(15)

The presence of ASTC bus station with big size public vehicles by the side of busy AT road causes traffic jams and inconvenience to the public. For better mobility and to reduce air pollution, the plan recommends to shift the existing ASTC bus station to the newly constructed Makum Bypass near the junction of Gelapukhuri road.

5. Shifting of godown from existing ASTC area

The presence of unplanned, haphazard and congested godowns within core areas of the town make it fire prone and not suitable for healthy urban living. In order to live in a balanced healthy living urban environment the plan proposes to shift all godowns to the proposed logistic hub.Logistic hub is proposed in an effort to create Transit Oriented Development (TOD).

6. Scheme for Solid waste Management system as per Waste Management Rule, 2016.

The existing solid waste disposal site by the side of Tingrai river needs immediate scientific handling as it is not only contaminating the river water but also generating toxic gas and smokes forcing the travellers to suffocate a lot.

7. Shifting of all Govt. offices scattered in the town area to the Integrated DC office / Administrative Block at Boroguri and Utilisation of spaces under these offices for public purpose like Multi-storied Parking, Open Air Theatre, Parks and Open space, Sports Academy,Exhibition cum Sale Centre for organic and other rural produce etc.

8. Improvement of Subosini road with both side drains and provision of no-parking from Pinewood Hospital T-Junction to the connecting point of Subosini road with Rangagorah road.

9. Construction of an alternative road parallel to Subosini road connecting Gelapukhuri and Rangagorah road: The existing Subosini road is very

important road and carries heavy mixed traffic everyday. It connects Tinsukia Civil Hospital from both Rangagora and Gelapukhuri road and also act as an alternative road to GNB road when GNB road is closed for any reason. As Subosini road passes through built-up area with limited Right of Way, as such plan recommends an alternative road to Sobosini road through Bordoloi nagar, Dohutia chuk connecting Rangagora road.

10. Up-gradation of State Fire Service Station: Considering the growth of Tinsukia in recent years, the existing fire service station of Tinsukia requires immediate upgradation with proper infrastructure and macheneries to handle any emergencies.

11. Identification of water logged area and development of drainage network as per plan submitted by Drainage & Sewerage Division, Tinsukia.

12. Proposal for Fly over :-

(a) Railway over-bridge at the junction of AT road and Tinsukia Makum Bypass - for sustainable and balanced development of both sides of the master plan area.

(b) Road junction of Tinsukia-Makum Bypass and Guijan road – to avoid occurrence of frequent accidents.

(c) Railway over-bridge from Tinsukia Makum Bypass to Tinsukia Medical College – for availing immediate medical care.

(d) Escape point Chariali – to reduce traffic jams, air-pollution etc.

13. Proposal for Rotary and Traffic Island for ease of movement :-

(a) a rotary at the junction of Gelapukhuri road with Tinsukia Makum-Bypass

(b) a traffic island at the junction of Tinsukia Makum Bypass with Dhelakhat tea estate road.
(c) a traffic island at the T-junction of Tamulbari and AT road.

14. Proposal for one way road for better traffic management:
(a) Khargeswar road
(b) State bank road/ Senairam Lohia road.
(c) Chirawapatty road.
(d) Devi-pukhuri road
(e) Dr. Nabibullah road

15. Proposal for Internationals Convention centre.

16. Proposal for Inter State Bus Terminus at Tinsukia Makum Bypass.

17. A comprehensive traffic and transportation management plan including Vending zone, Zebra-crossing, Widening etc. A few roads require enforcement of no-stoppage, no-parking proposal.

18. Improvement of existing traffic signal points and setting up new ones.

19. Setting up of Organic farming industryand transferring agricultural marketing board more vibrant.

20. Development of logistic hub and industrial estate.

21. Widening of a few vital roads in the southern side of master plan for equal development on both sides, better connectivity, ease of movement and sustainable development. Roads are marked in the Circulation plan.

In the first phase, the schemes like widening and improvement of roads, construction of new roads, scheme for slum area up-gradation and relocation, provision for required spaces for parks, playgrounds and parking places and improvement of commercial and market areas including existing market, daily bazaar etc. can be taken up. The urban local body and parastatal agencies have to play an important role visioning with other Govt. agencies in formulation and execution of such schemes in the master plan area. All the above schemes need to be carried out to make the plan area into healthy place of living.

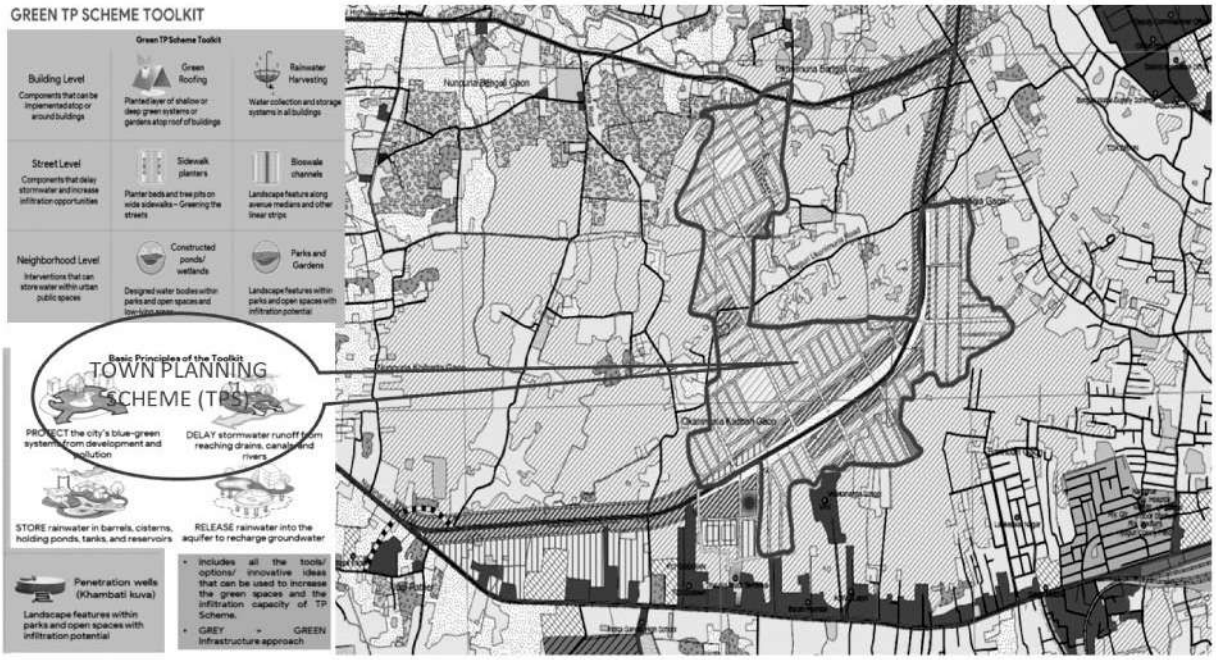
9.2 Fund Requirement for Each Sector/ Project

Fund requirement for each sector project will be finalized by the ULB & concerned line departments after preparation of detailed project report as per Govt. instruction.

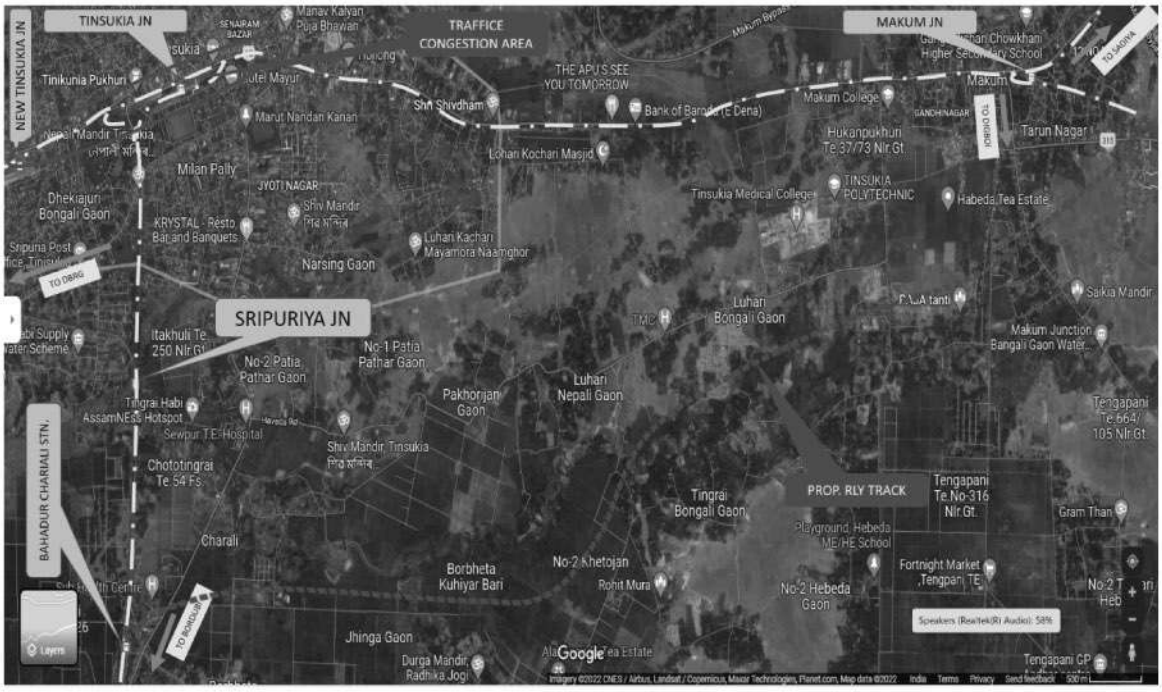
9.3 Identify Land Site for Proposal

The plan finds the following sites are suitable for taking up the proposals in accordance with the existing trends of growth as well as for balanced development.

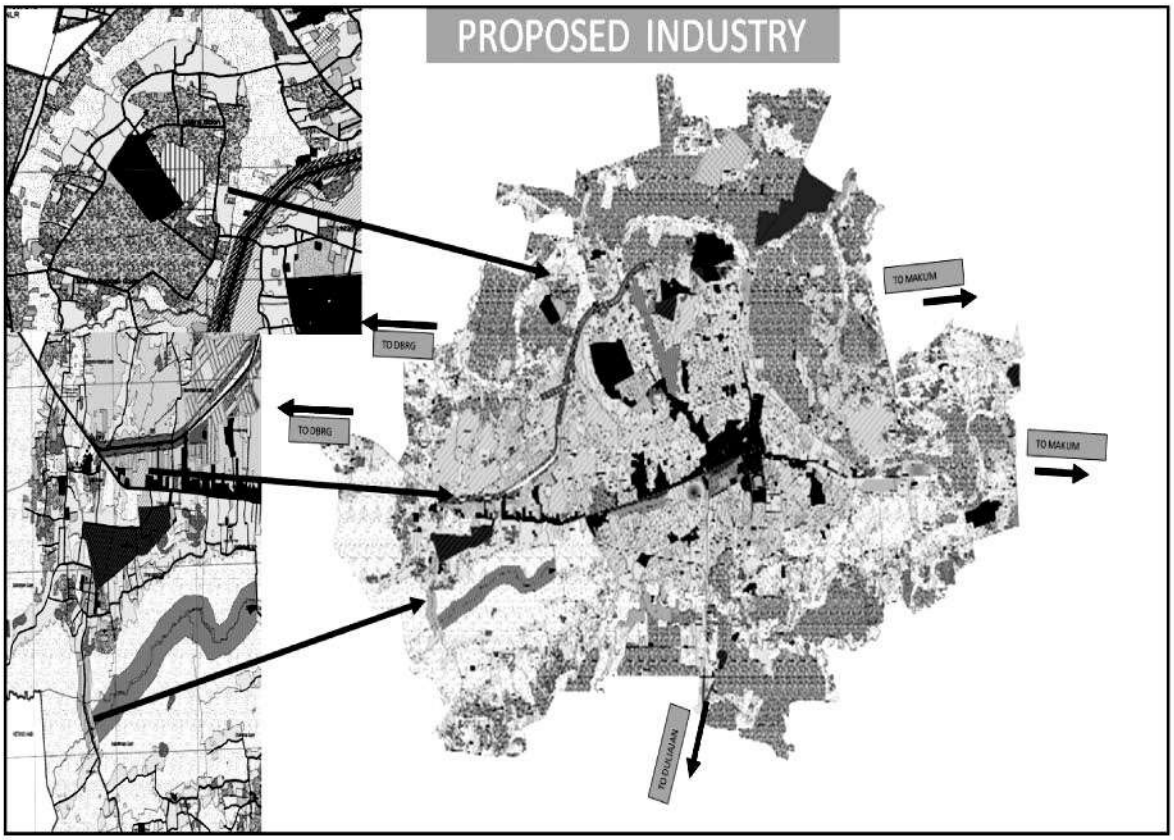
(1) Planned Residential Neighbourhood (Town Planning Scheme) : Okonimuria Kachari gaon, Dehingia gaon, Laipuli at Tinsukia Makum By Pass



(2) Shifting of a portion of railway track from IOC colony level crossing to Makum junction.

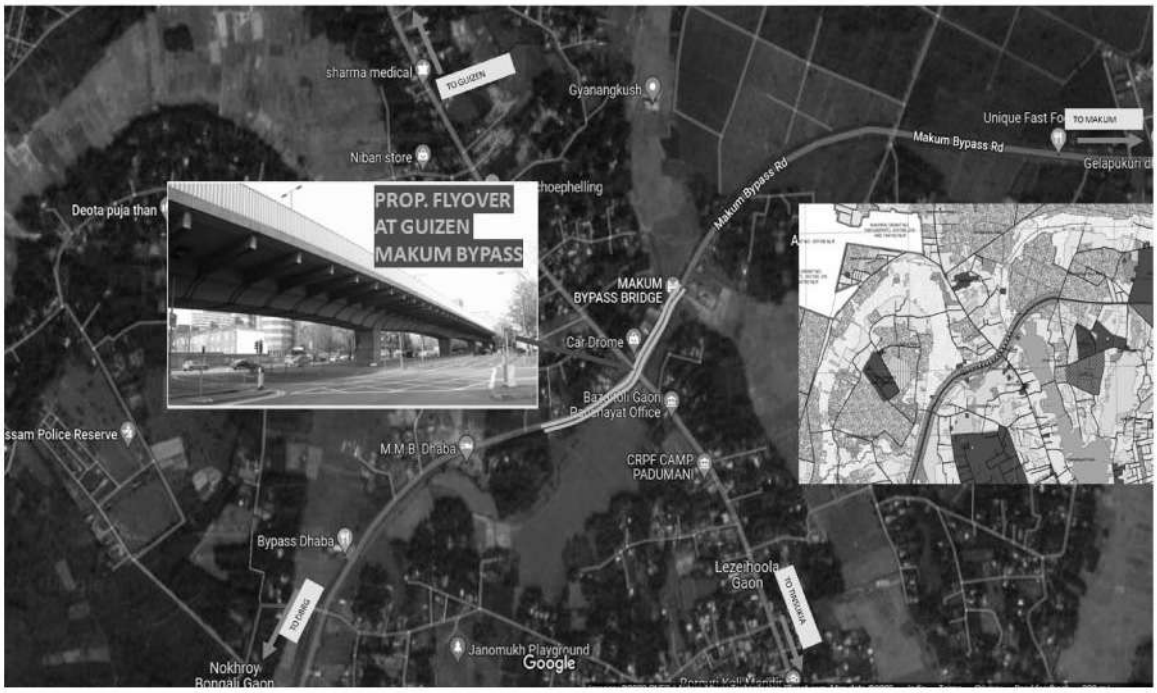


(3) Proposal for industrial areas in Tinsukia master plan

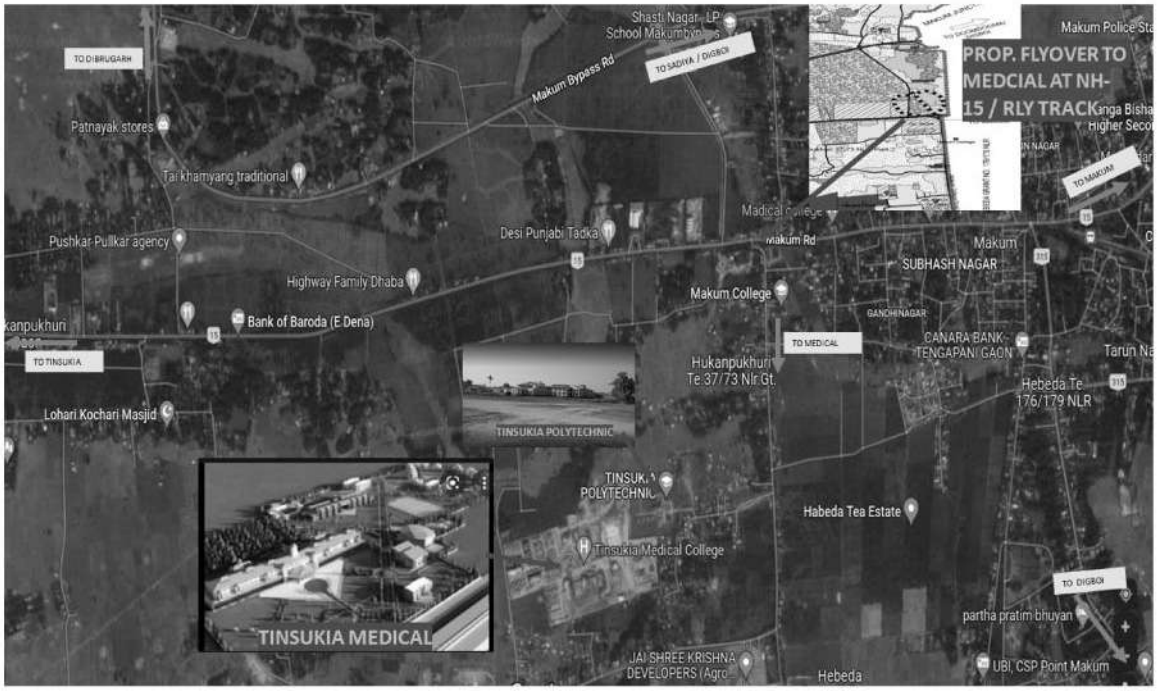


(4) Proposed Fly over :-

(A) PROP. FLYOVER AT GUIJAN TINSUKIA-MAKUM BYPASS



(B) PROP. FLYOVER AT AT road / NH- 15 for Medical – Polytechnic College

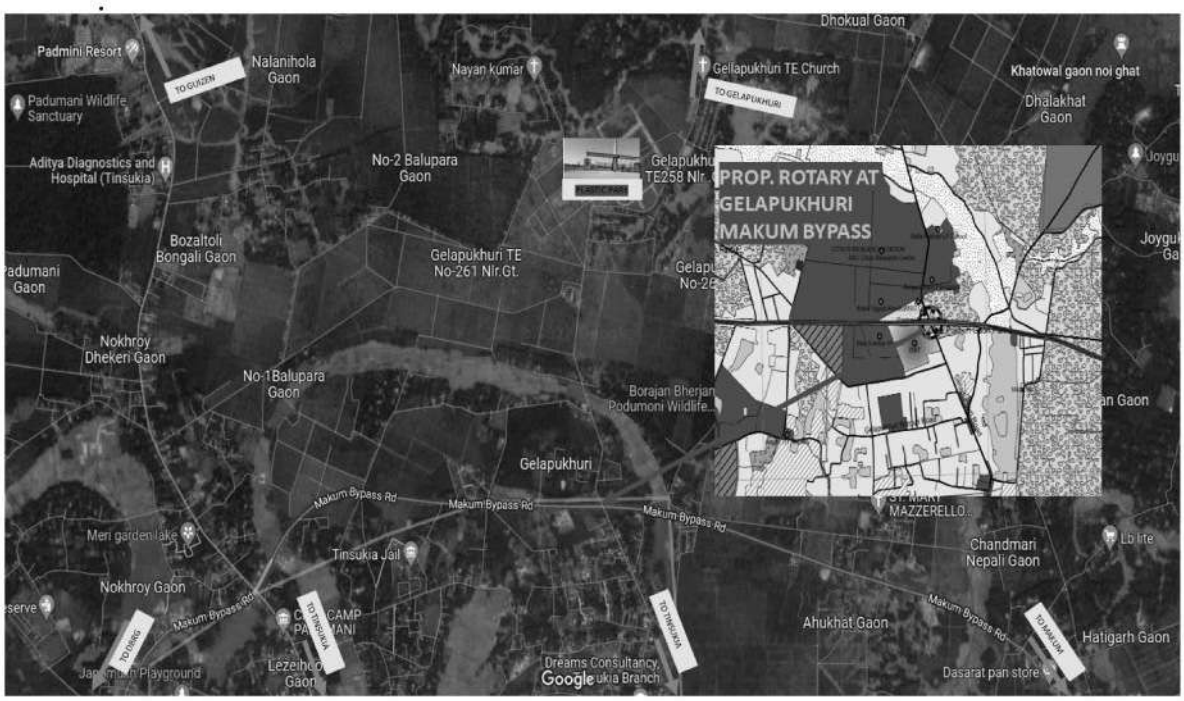


(C) PROP. FLYOVER AT AT road / NH- 15 TO DULIJAN

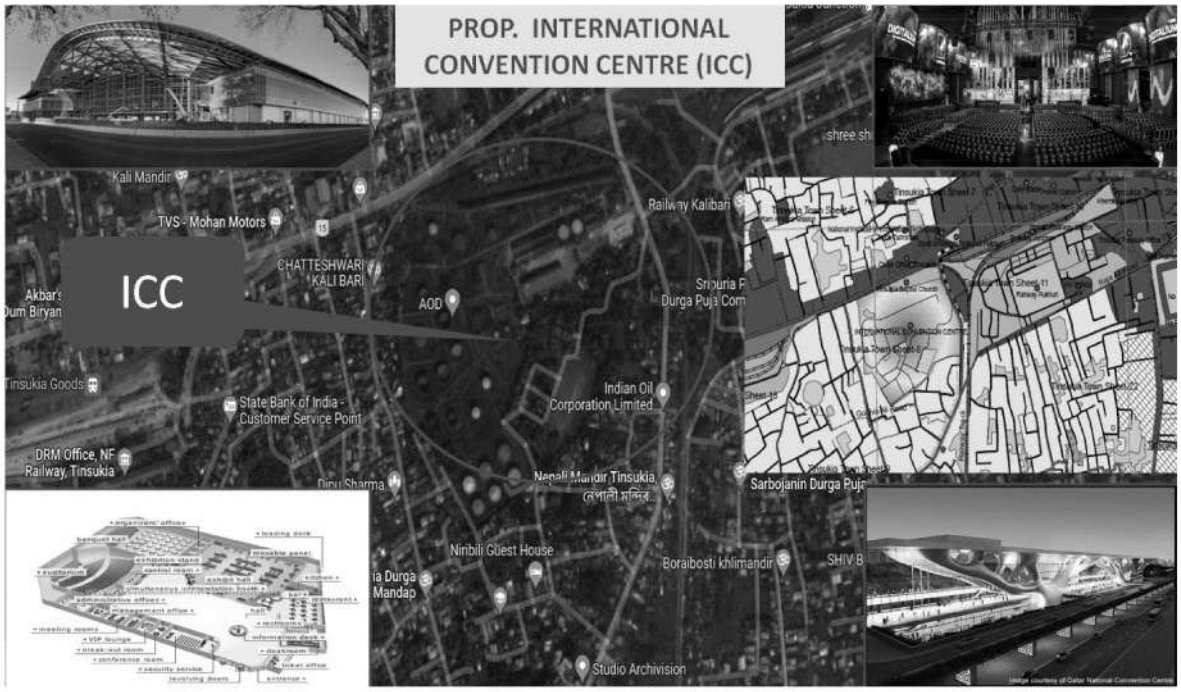
(D) PROP. FLYOVER AT NH-15 AT TINSUKIA – MAKUM BY PASS JUNCTION (LAIPULI)

(5) Proposed Rotary

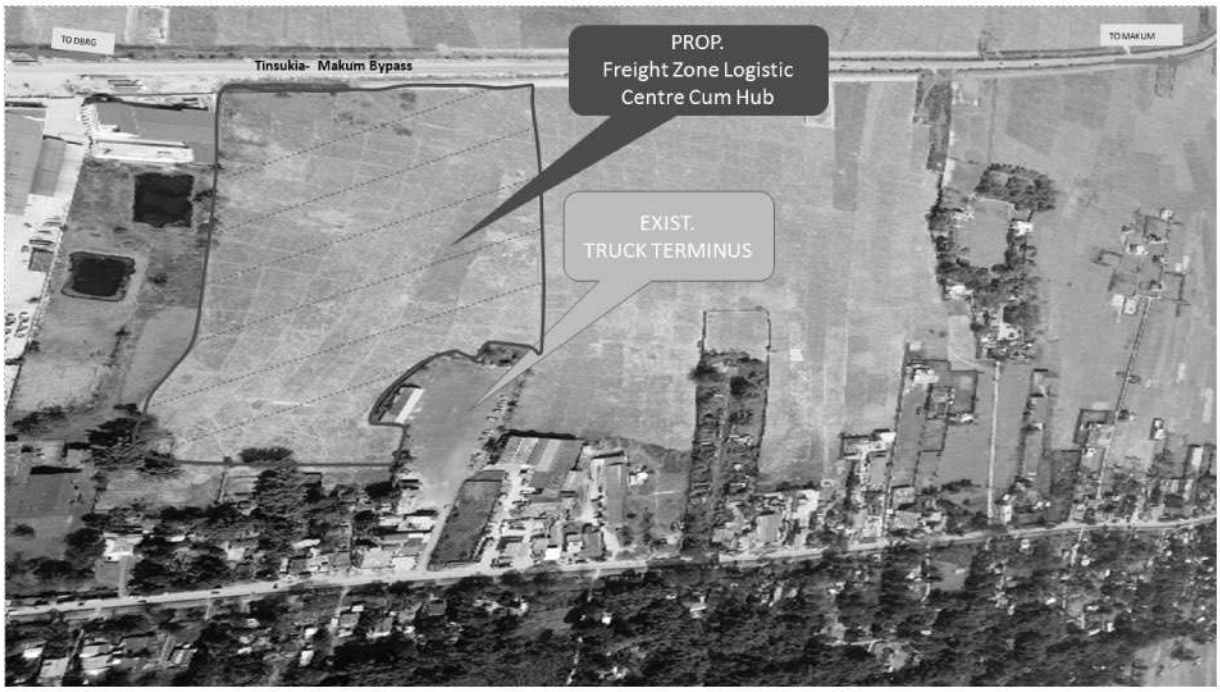
(A) ROTARY AT GALAPUKURI MAKUM BYPASS JUNCTION

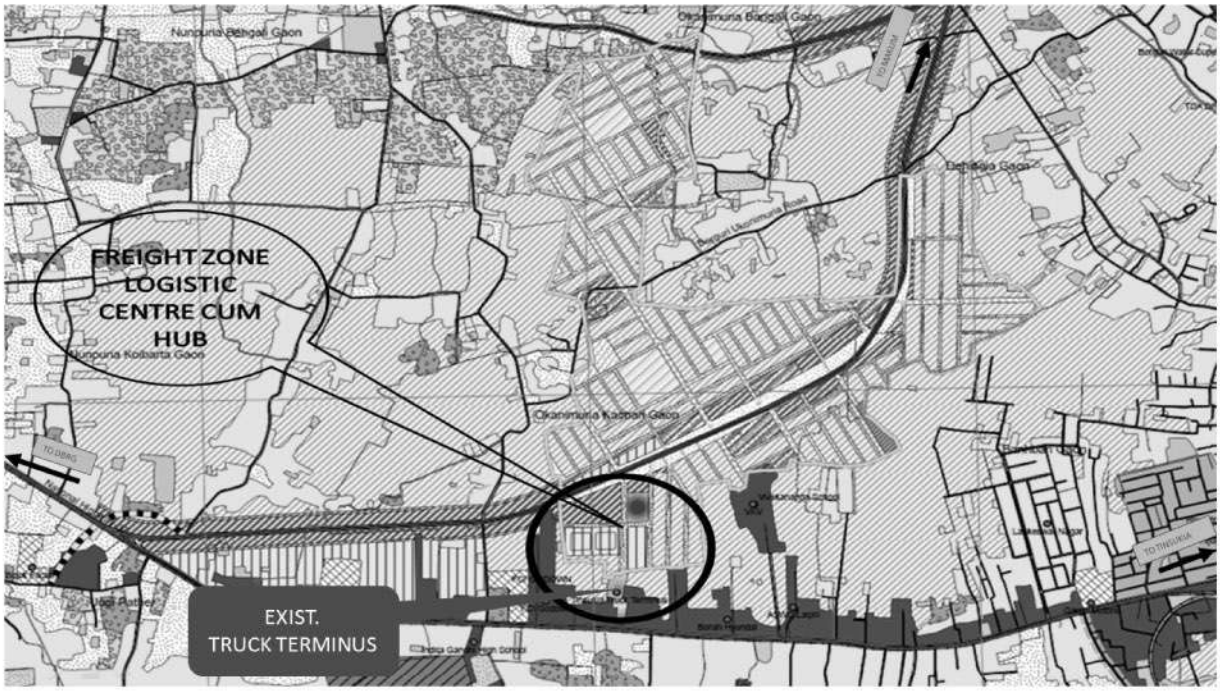


(6) Proposed International Convention centre

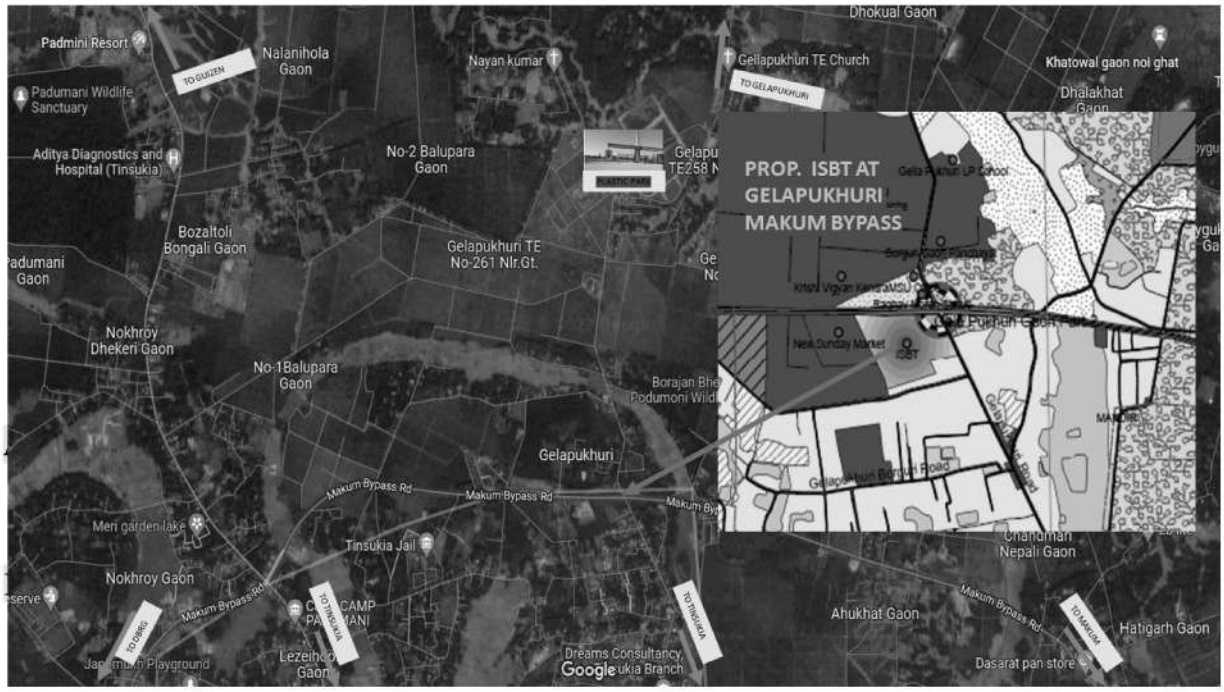


(6) Proposed Freight zone logistic Centre Cum Hub at Tinsukia- Makum bypass

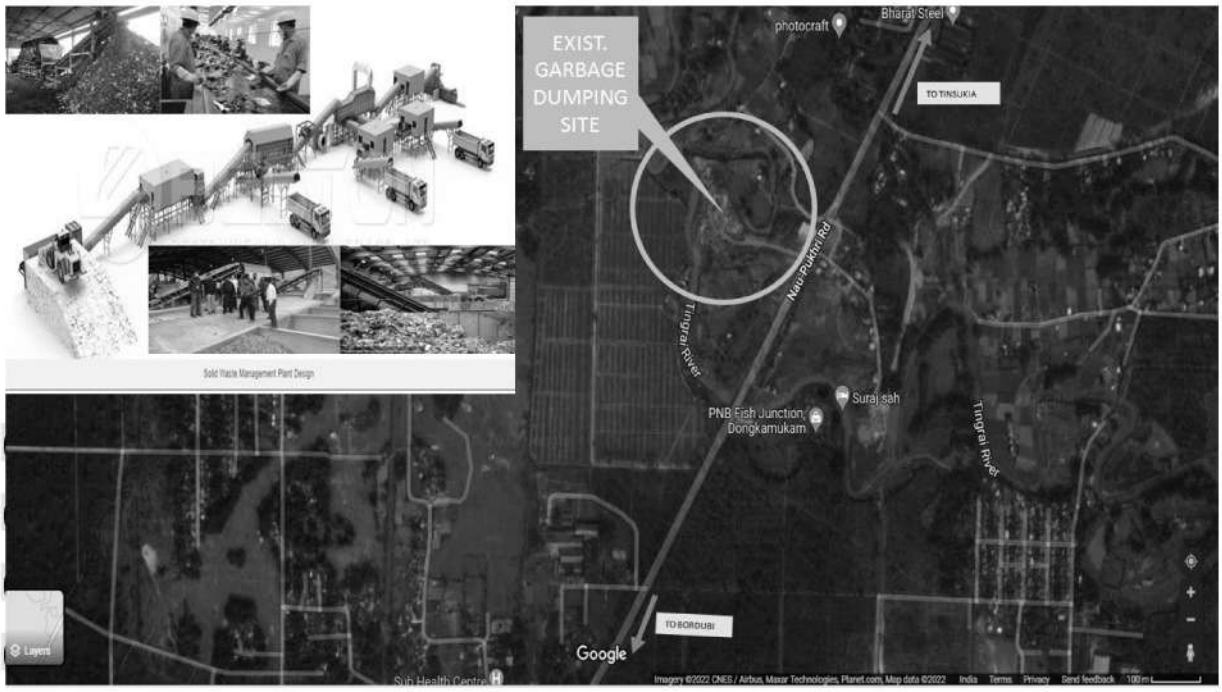




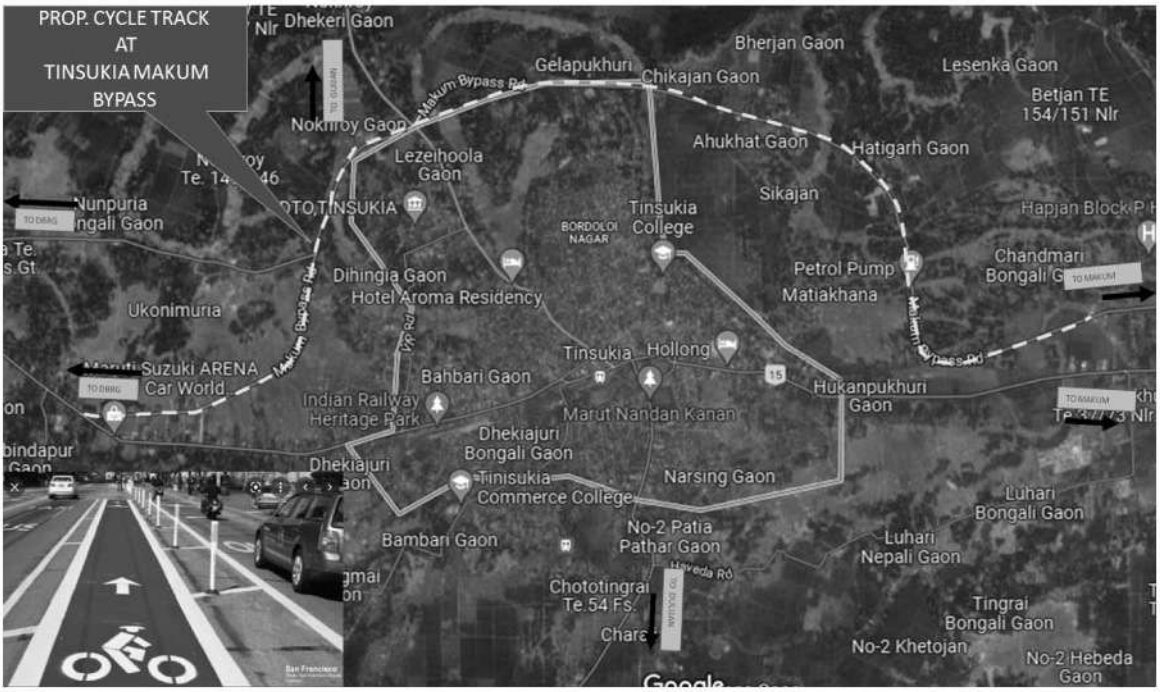
(7) Proposed ISBT at Galapukhuri – Makum Bypass Junction



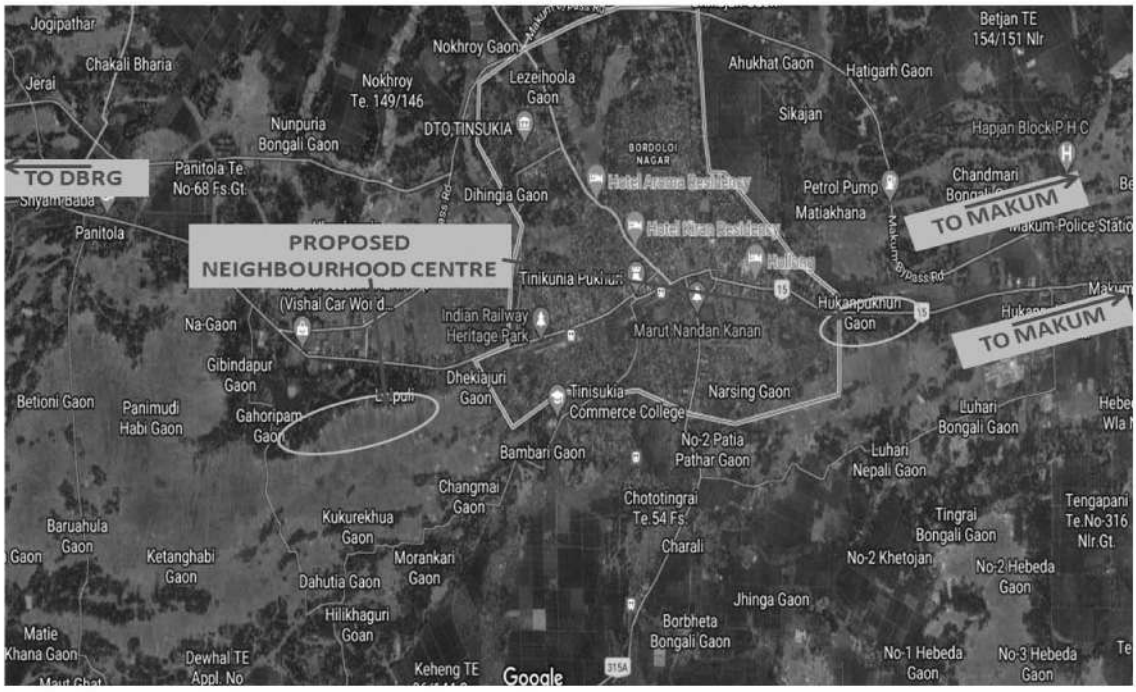
(8) Solid Waste Management System as per waste management Rule, 2016.



(9) Cycle track :- At Tinsukia – Makum Bypass



(10) Proposed Neighbourhood Centre/RLDS



9.4 Indicative Sources of Fund

The ULB, parastatal agencies and concerned line departments shall submit the DPR's to their respective departments for sanctioning fund from State and Central Government under various schemes like Infrastructure Development Fund, NLCPR, NEC, Asian Development Bank etc. The implementing agency can also adopt the policy of Public Private Partnership (PPP) mode for raising the fund for the remunerative projects.

CHAPTER-10

10. Disaster Management Plan

10.1 Introduction

Disaster is an undesired calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Disasters are usually caused by nature but in some cases, it can be caused by human actions as well. Disaster can be broadly classified into water and climate related, geology related, and accident related. India has been traditionally vulnerable to natural disasters on account of its unique geoclimatic conditions. Floods, droughts, cyclones, earthquakes, and landslides have been recurrent phenomena. About 60% of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought.

At the national level, the Ministry of Home Affairs is the Nodal Ministry for all matters concerning disaster management. The Central Relief Commissioner (CRC) in the Ministry of Home Affairs is the nodal officer to coordinate relief operations for natural disasters. The CRC receives information relating to forecasting / warning of a natural calamity from India Meteorological Department (IMD) or from Central Water Commission of Ministry of Water Resources on a continuing basis. The Ministries/Departments/Organizations concerned with the primary and secondary functions relating to the management of disasters include India Meteorological Department, Central Water Commission, Ministry of Home Affairs, Ministry of Defence, Ministry of Finance, Ministry of Rural Development, Ministry of Urban Development, Department of Communications, Ministry of Health, Ministry of Water Resources, Ministry of Petroleum, Department of Agriculture & Cooperation. Ministry of Power, Department of Civil Supplies, Ministry of Railways, Ministry of Information and Broadcasting, Planning Commission, Cabinet Secretariat, Department of Surface Transport, Ministry of Social Justice, Department of Women and Child Development, Ministry of Environment and Forest, Department of Food.

Location: The region falls in the North eastern part of India and in the extreme east of Assam of 27.5° North latitude and 95.37° East longitude. The soil is mostly of alluvial origin. Due the heavy rainfall with cool and pleasant climate, vegetation growth is rich. The annual mean of maximum temperature is 24° C and the mean daily minimum at 9° C to 11° C temperature. On the other hand, the minimum relative humidity is 64 whereas maximum is 90.

With the passing of years Tinsikia has become a fully-grown urban centre of upper part of Assam and become the hub of administrative, educational, and commercial activities.

The area stretches from the north bank of the mighty Brahmaputra, which flows a length of 95 km through the northern margin of the district, to the Patkai foothills on the South. Till the great earthquake of 1950, the north easternmost corner was drained by the Dibru River. The Dibru was a main tributary of the Brahamputra the confluence of it being at about 11 km north of Tinsukia city, the earthquake caused severe erosion on its south bank and as a result the Dibru river got merged with its master stream in Rahmaria mouza under Dibrugarh district.

The district suffers following major natural hazards – floods, chemical disasters (fire), draught, famine and earthquake, which are of high frequency of occurrence. In the past years, flood has become a sorrow for the people of Dibrugarh district. Immediately after the great Independence day, earthquake of 1950, consequent landslides in the catchment areas of Brahmaputra and other tributaries have changed the topography of the rivers.

10.2 Current Scenario

The Tinsukia Development Authority (TDA) Drain which runs through the heart of the Town and passes by VIP road (2.8 Km) / flows towards north-westcrossing makum Tinsukia bypass (1.7 Km)covering a distance of 4.5 km. from the town. On the other hand, most of the roadside drains are kutcha and have mild gradient towards the outfall. The low discharging capacity of these drains, poor drainage system and unfair construction practices has been the main determinant of artificial flood and water logging problem in the town. The worst affected areas are Manav Kalyan Road, State Bank Colony, Parbotia, Prakash Bazar, Super Market, Daily Bazar, a large stretch of AT Road and Rangagora Road, Makum Road, Raja Ali Road and Sripuria.

The basic objective of current Disaster Management Action Plan is to protect all the residents and the wealth of the region from all sort of untoward incidents through the following objectives:

- To prevent loss of human lives and property.
- Institutionalization of disaster management in district administration level.
- Encourage a culture of disaster preparedness.
- Vulnerability reduction and disaster mitigation through better planning process.
- Creation of best government mechanism to handle and unprecedented events.
- Instant response and effective decision making in disasters.

Better coordination of relief and rehabilitation in the aftermath of a disaster.

- Better coordination of all line departments in disaster management.
- Regular updates of resources in and around the district.

10.3 Hazards Specific Proneness in Tinsukia:

10.3.1 Flood

The tributaries of the Brahmaputra have widely divergent characteristics in the district. 45 per cent of Assam's total area is flood prone. The Brahmaputra river with its 34 tributaries causes regular floods in the state. The average annual rainfall in the state is 1662.2 mm. Ninety per cent of the heavy downpour occurs in the months of April-September. In 1999, more than 200 villages were inundated, and 0.27 million people in 749 villages of 10 districts were affected. In the year (2001), 94,382 people in 12 districts and 483 villages were severely affected. Road and rail communication was cut off in many districts. In 2000 alone, 3 million people lost their homes and vast stretches of paddy were swallowed by floodwaters. During 2002 floods 41 people have lost their lives, 19,827 houses damaged, and 0.3 million hectares of cropped land has been affected. During 2003, 30 people have lost their lives, 4660 houses have been damaged, and 0.2 million hectares cropped area has been affected.

Tinsukia has a high amount of rainfall primarily because of the clouds of the monsoon. This leads to very high rainfall in the whole district. Such a heavy rainfall causes largely flash floods, and occasionally erosion etc. The affected villages in Tinsukia district under (a) Tinsukia Revenue Cirlce are from Rangagorah Mouza 13 villages, Bogdung Mouza 1 village, Tingrai Mouza 1 village (b) Margerita Revenue Circle are from Makum Mouza 20 villages, Tirap Mouza 13 villages, Buredihing Mouza 3 villages (c) Doomdoma Revenue Circle are from Sadiya (SouthBank) Mouza 18 villages, Sadiya (SB) Mouza 4 villages, Saikhowa Mouza 10 villages,Hapjan Mouza 6 villages (d) Sadiya Revenue Circle 68 villages.

10.3.2 Earthquake :-

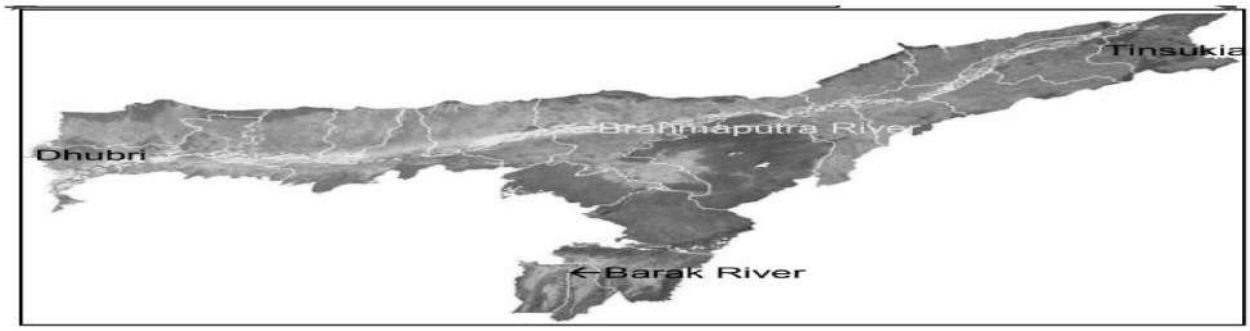
Around 58 % of the territory of India is vulnerable to earthquake, and the country has experienced 3 main earthquakes in the past few decades. The state of Gujarat has experienced a major earthquake in January 2001, Jammu & Kashmir in October 2005 and Sikkim in 2011. The major consequences of any earthquake are widespread human and material losses, excessive damage to infrastructure and services. The North-East part of the country where Tinsukia region lies has observed major earthquakes in year 1984 and 2009.

As per the latest seismic zoning map of India, Tinsukia region falls under High Risk Zone- V, where a maximum intensity of IX can be expected.

In 1950 the name of Sadiya in present Tinsukia district is noteworthy. The township of Sadiya was the first casualty owing to the change of the course of the Digaru river. As a result of the earthquake, Sadiya was completely cut off from the rest of the world by the river Brahmaputra and people of this area suffered to a large extent. Moreover, increase in channel width of the Brahmaputra River, grasped more than hundreds of villages in the region. Many people who were washed away or fall into the cracks, could not be saved. The increase in the width not only caused problem in the communication and transportation between two banks; but also left many people homeless and stranded in the middle of the nowhere. Beside this, the 1950 earthquake had a great impact on the agriculture which was the common means of livelihood. As the agricultural land was affected by earthquake, the farmers could not cultivate their lands for a long period of time as lands became barren and uncultivable. The decline in the cultivated area was witnessed after the 1950 earthquake which noticeably gave a setback to the economic condition of the common people and it affected in collection of land revenue also, which was considered as a great loss to the government. In the valley, displacement of people was witnesss- due to erosion, which became a perennial problem after the 1950 earthquake. A number of displacement was witnessed and those displaced people were settled in the areas mostly forests reserves or grazing reserves.

10.3.3 River Erosion : -

River erosion is a season specific calamity observed in certain period of time mostly in fixed seasonal interval. In rainy season specifically from months April to July, when Brahmaputra river flows in its peak capacity level,



the erosion on banks becomes disaster for the bank settled informal settlements. In year 2008 And 2010 river erosion in a massive scale was observed.

TABLE NO-54

River Erosion in Tinsukia

Particulars	Area eroded (ha)	Area deposited (ha)
The amount of erosion and deposition during 1996- 2002 in Tinsukia	2143	589

(Source :- Superintending Engineer, Hydrological Observation Circle, Central Water Commission, Ghy Report 2004, pg.17)

10.3.4 Fire : -

The fire takes places in Tinsukia due to short circuit in commercial areas, thatched house. Mainly fire takes place from March to April when the climate remains very dry. Tinsukia region is also prone to industrial disaster due to the presence of oil refinery, coal and oil pipe lines in the region.

Authorities are trying to douse the flame at Baghjan oil well in Assam's Tinsukia district for over a month.(ANI File Photo)

10.3.5 Cyclone:-

In Tinsukia cases related to medium density cyclone occurred in many places and affect the region.At least 2 children died and several injured when a cyclonic storm lashed vast areas under Saikhowa block in Tinsukia district on 14 May 201 9 (Sunday) evening. The storm affected as many as 45 villages under four panchayats, namely Dangori, Dholla Dhabum, Saikhowa and Na Bormura. According to an estimate, 1,205 houses were damaged and several were flattened. Trees were uprooted leaving a trail of devastation in 30 minutes strike.

TABLE NO-55

Years of occurrence for Cyclone affected areas

Sl.No	Disastrous Event	Year of occurrence	Area Affected
1.	Cyclone storm	2010, 2012,2016, 2017,2019	Doomdoma, Dangori, Dholla Dhabum, Saikhowa, Kakopathar, Margherita

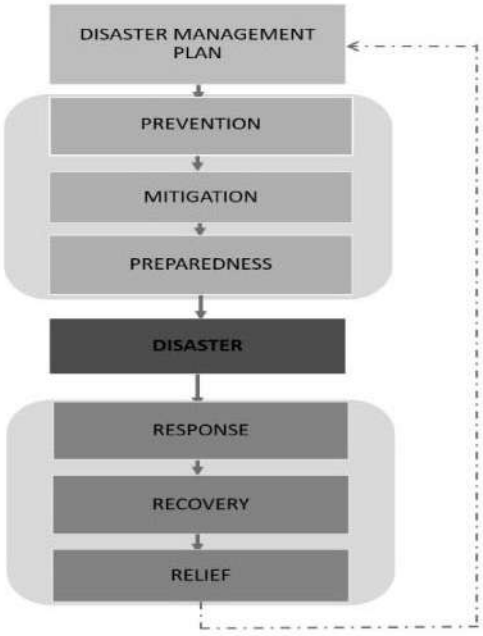
10.4 Seasonal Hazard Analysis

TABLE NO-56

Month wise Seasonal hazard analysis

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Flood												
Drought												
Earthquake												
Fire												
Industrial Disaster												
Epidemic												
Road Accident												
Lightening												

10.5 Disaster Vulnerable Area Mitigation Plan



Any disaster management plan or emergency management plan consists of four phases, namely: Mitigation, Preparedness, Response and Recovery. The mitigation component in an emergency management plan is aimed at reducing the risk, impact, effects of a disaster. Hence careful planning in the mitigation phase is important to reduce or eliminate the Longterm risk to human life, property from natural and manmade calamities. It's important to have mitigation plans led by local community, working together to identify, plan for in the event of a disaster and reduce vulnerabilities and promote long term personal and community resilience and sustainability. Mitigation plans can concentrate on both pre-disaster and post disaster efforts to reduce the impact of the disaster. Pre-disaster Mitigation should focus on projects and interventions to address natural and man-made disaster to reduce risk to the population and property. This is mainly achieved by strengthening the resilience of National/State Infrastructures. Post-disaster Mitigation efforts

are primarily designed to reduce future damage in an affected area and decrease the loss of life and property due to the incidents following the disaster. Tinsukia region is more prone to floods, than any other natural disasters hence the disaster vulnerable area mitigation plan focuses on flood and cyclone related eventualities and how can it be mitigated and have a better preparedness. It is important to note that disaster management is an integrated task involving various government departments ofregion and the plan should focus on prevention, preparedness, mitigation, response, and relief measures.

10.5.1 Prevention Plan

As part of prevention of the said natural disasters, the following measures can be adopted by concerned government departments to avoid and minimize the impacts of natural disasters.

The Water Resource Department should monitor the major water bodies like rivers, streams, lakes for constant flow of water, rising levels, and identify potential areas along the water bodies which need additional embankment or revetments, and these works should be implemented on priority before the onset of the season.

Power and Communication should carry out through inspection of power lines, communication lines for defects and rectify them. Trees and branches which may damage power and communication lies should the trimmed or removed.

Health department should ensure that the primary practice upon triage and community health centers are equipped with medicines and medical staff. Preventive vaccines for epidemics should be stocked in adequate quantity. Chlorination of drinking water should be ensured to avoid the outbreak of epidemics in the event of cyclones and floods.

The Department of District Disaster Management Authority is the nodal agency in the Tinsukia region and has already handled several flood and cyclone situation in the region. From this experience, it should be able to identify the low lying and vulnerable areas and the population of such places must be warned to be alert and to be ready to move to the cyclone shelters or to safer areas or to the relief camps in case of warning of disaster.

The Department of Civil Supplies & Consumer Affairs should decide for creation of buffer stock of food grains by making required withdrawal from the Food Corporation of India. Also, adequate quantities of Kerosene and diesel should be procured and made available through the Fair Price Shops.

Department of Agriculture should take steps to publicise precautionary measures to be taken to save the standing crops in the vulnerable areas.

Farmers should be encouraged to have platforms in their fields to stock the crops. Desilting of public and private irrigation channels should be ensured for quick drainage of paddy fields.

Fisheries & Fishermen Welfare Department shall alert all the riverside villages and hamlets about the impending natural calamity and advice the fishermen not to venture into sea till normalcy is restored.

Department of School Education shall keep all schools ready for accommodating the evacuees and keep the Central Kitchens to function around the clock with in charge of the centres. NCC and NSS students shall also be grouped to send them for relief works and evacuation mockdrill practice in school.

Transport Department should keep ready the list of sufficient numbers of earthmoving vehicles, transportation vehicles such as trucks, tractors, tippers, mini buses etc. Further, all the listed vehicles allocated in connection with calamity has to be kept in roadworthy condition for using them in emergency.

Fire Services Department and State Disaster Responce Force shall keep available sufficient number of rescue materials, like life jackets, buoys, ladders and ropes.

Similarly, the Fire Services Department shall set up Search & Rescue Team consisting of at least 6 members of each Fire Service Station.

Department of Animal Husbandry & Animal Welfare should store fodder, cattle feed, poultry food etc. and also carry out the inoculation of animals against epidemics. The Key Village Units should harbour stray cattle with shelters.

Local Bodies shall make arrangements for availability of Generators and pump sets at short notice. For areas with waterlogging Local bodies should clear the L & U type drains which normally clog due to plastic materials and silt.

The Police Department shall set up a Search & Rescue Team which shall contain at least 20 Police Personnel for each jurisdiction of the Superintendent of Police.

Identification of hazardous locations in different Circles is to be done and marked on the map. Basically, these locations are found prone to fire, earthquake, and artificial flooding. Fires found to be spread out mostly as a result of narrow roads while artificial flooding because of poor drainage pattern. Master Plan of Drainage pattern is to be completed by Town

&Country Planning. Disaster Management Plan should be prepared by all concerned departments as per Disaster Management ACT 2005.

There are 2 types of majors Structural and non-structural i.e., Steps are to be taken to mitigate the problems out of Erosion in the banks of Brahmaputra, Fire & Earthquake and Training of Village Land Management and Conservation Committee Members (VLMCC) on preparation of Village Master Plan and Constitution of Ward Disaster Management Committee in 15 wards of Tinsukia Municipal Board and follow up action

The activities of different line departments to save the life of people and properties in accordance with disaster management cycle. Police departments, Police control room, Wireless facilities, Fire and emergency services and civil defense and home guard.

TABLE NO-57

Structural and Non-structural measures of line departments

Sl. No.	Structural measures	Non-structural measures
1	Installation of Water Collection Deep Tube Well Pumps at five selected sites to be used for firefighting purposes	Training of Village Land Management and Conservation Committee Members (VLMCC) on preparation of Village Master Plan
2	Water Pumps to install in identified locations to pump out logged water	Constitution of Ward Disaster Management Committee in 15 wards of Tinsukia Municipal Board and follow up action
3	Construction of Wooden Boat to be used for rescue purposes	Public awareness programmes on Safe Construction Practices & Earthquake Preparedness in different wards of Tinsukia
4	Redesign existing storm water and drainage systems in flood prone areas	Training of Doctors on Emergency Health & Mass Casulty Management (TRIAGE)
5	Erosion protection works in vulnerable reaches along the bank of river Brahmaputra , Works to strengthen the embankment	Increase public awareness of flood hazard and mitigation possibilities
6	Undertake structural safety audit of lifeline buildings and schools	Training of Engineers on Rapid Visual Screening, Workshop on Earthquake Risk Mitigation and Management
7	Undertake structural safety audit of Shopping, Malls, Nursing Homes, multistoried buildings	Training of Task Force Members (Quick Response Team) on Search, Rescue and First Aid
8	Map locations of all key buildings in the District and rate them on the basis of rapid visual screening exercise/ Non-Destructive (ND) Test	Earthquake Shakeout programme in schools

9	Undertake retrofitting of key lifeline and critical/ social infrastructure	Training of Principal/ Head Masters of HS/High/ME/LP schools on School Safety & Disaster Management
10	Adopt zoning parameters as identified in the Model Building Byelaws issued by MHA (Sept. 2004)	Mock exercises in several locations
11	Fire Safety Audit of Shopping Malls, multistoried buildings as per underlying norms National Building Code	Training programmes on Disaster Management conducted for the officers & staff of different vital Govt. establishments
12	Enforcement of National Building Code/Indian Standard Code of Practice (BIS) and Assam Notified Urban Areas (Other than Guwahati) Building Rules, 2014	Disseminate alert and warning mechanisms of flood early warning system (FLEWS) project to communities (preferably through VLMCC)
13	Conduct detail flood hazard mapping of the District	Promote flood insurance
14	Map all infrastructure at risk to varying intensity of flood hazard	Disseminate flood hazard mapping information to stakeholder
15	Identify areas prone to sediment built up and measures to take up	Undertake Undertake Mock Drill on flood rescue

10.5.2 Mitigation and Preparedness Plan

Pre- disaster planning consists of activities such as disaster mitigation and disaster preparedness. Disaster mitigation focuses on the hazard that causes the disaster and tries to eliminate or drastically reduce its direct effects. The best example of mitigation is the construction of embankments and construction of proper drainage system in flood prone areas to avoid floods. The other example includes retrofitting of weak buildings to make them earthquake resistant.

And preparedness focuses on plans to respond to a disaster threat or occurrence. It takes into account an estimation of emergency needs and identifies the resources to meet the needs. The first objective of the preparedness is to reduce the disaster impact through appropriate actions and improve the capacity of those who are likely to be affected most. The second is to ensure that ongoing development continues to improve the capacities and capabilities of the system to strengthen preparedness efforts at community level. Finally, it guides reconstruction so as to ensure reduction in vulnerability. The best example of preparedness activities are the development of community awareness and sensitization system through community education and administrative preparedness by way of stockpiling of supplies, developing emergency plans for rescue and relief.

For a successful mitigation plan it is necessary to identify short-, medium- and long-term mitigation measures for various hazards for

structural and non-structural risks and damages. Mitigation measures should focus to reduce both the effect of the disaster and the vulnerable conditions to it, in order to reduce the scale of a future disaster and its impacts. Mitigation measures should also focus at reducing physical, economic and social vulnerability of the region at the event of the disaster. Cyclone mitigation and preparedness largely hinges on the preparedness of the community. The following steps can be taken to reduce the risk in the unfortunate event of the said natural disasters.

10.5.3 Restore Communication networks:

The task force in association with Fire Service, State Disaster Response Force (SDRF) & Civil Defence should thoroughly search the affected area for survivors and injured.

In case of heavy flooding and inundation, vehicular access may be restricted and hence suitable rafts/ boats should be used to rescue and evacuate the people affected by the floods.

The waterlogged in low lying residential areas should be pumped out and the pumped out water could be let through the nearest natural drain or canal. Also, fire engines can be deployed to pump out water from affected areas during emergencies.

Any breach in rivers, streams or natural drains should be protected with adequate sandbags or creation of temporary embankments to avoid further damage to property and human life.

In case of heavy storms, power supply to areas which are in the primary path of the storm can be disconnected to avoid hazards due to breakage of power lines. Provisions should be made to provide generators for temporary power supply to storm affected areas.

Relief camps should be opened in appropriate locations where a large number of people are affected.

Health facilities like General hospitals and Medical Colleges should be ready to accept crowd in case the primary health centers gets overcrowded.

10.5.4 Response Plan

Response measures are those taken immediately prior to and following disaster impact. It is important to have clear organization structures with established line of authority within the government mechanism to handle the response plan in case of natural calamities. The plan should detail out the various phases from early warning to rehabilitation and the roles that agencies play in reaching the vulnerable and affected to identified disaster support infrastructure located in the Tinsukia region. Response plans include

formation of functional teams and providing plans for transportation, evacuation, search and rescue, and rehabilitation. They are supported by supervisory zone-based teams assuring food, shelter, water, medicine to the vulnerable to uphold physical and psychological health. Survey and assessment should be the part of response activity.

Resource Mobilization during Response:
District Directorate of Information and Public Relations

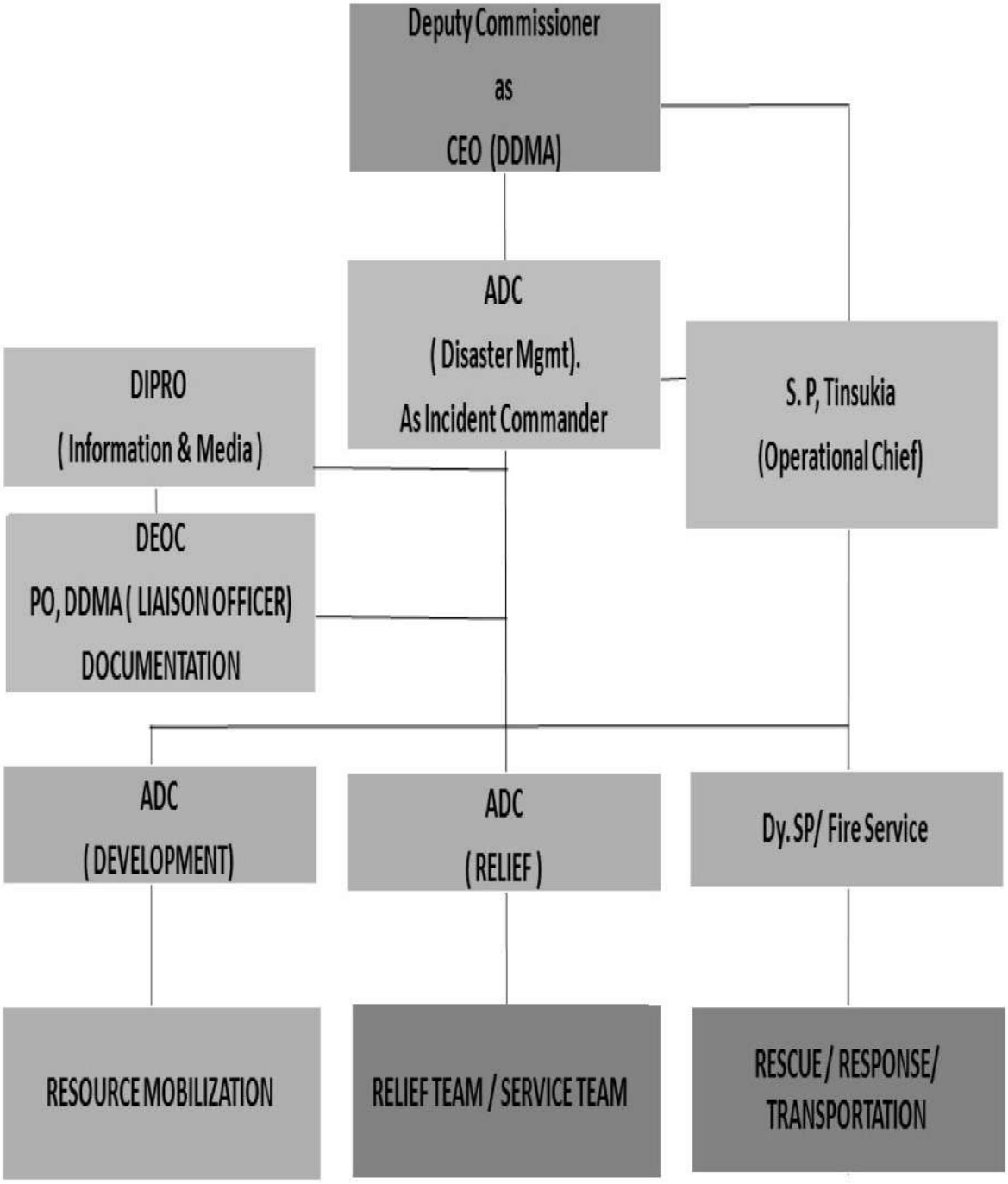


TABLE NO-58
Response plan at District level

Sl.No	Response at district level	
1	On receipt of Flood Warning, DDMA will pass the information for taking necessary measures to: • The concerned SDO (Civil) • Revenue Circle Officer • Suptd. of Police • Executive Engineer WR Dept. • Executive Engineer, PWD(Roads) • Station Officer-Fire Service Station and I/C of State Disaster Response Force (SDRF)/National Disaster Response Force (NDRF) if stationed in the district. • Deputy Director, F&C Supplies • Jt. Director Health Services • District Veterinary Officer to take necessary measures so that if necessary, assistance can be provided in short notice to the affected areas • DIPRO, if requires giving public announcement for evacuating people from vulnerable areas	Deputy Commissioner (DC) will direct Addl. DC or CEO, DDMA
2	SP will instruct Senior Station officer, Fire and Emergency Services/SDRF to assist the Circle Officer in rescue, evacuation and relocation processes	Superintendent of Police (SP)
3	Senior Station officer, Fire and Emergency Services will mobilize teams of SDRF and boats available in their custody and coordinate with DDMA/Circle Officer for response.	Snr. Station officer, Fire and Emergency Services
4	Executive Engineer, WR Dept. shall mobilize man material to strengthen weak embankment, keep constant vigil on Water Levels & and take necessary temporary measures to avert any breaches in embankments.	Executive Engineer, WR Dept.
5	Take adequate measures to ensure that the road communication is not disrupted; repair any breaches on roads for evacuation and supply of relief to the affected people.	Executive Engineer, PWD (Roads)
6	Jt. Director Health Services on receipt of information will initiate to mobilize medical response team, ambulances and alert all government hospitals in the area likely to be affected. JD shall also direct SDMHO and I/C PHC of the concerned area to form a team of doctors equipped with necessary medical equipment and move to the affected places or Relief Camp/centre as required by the Circle Officer	Jt. Director Health Services
7	Take periodic report of the situation and instruct Circle Officers, Jt. Director Health Services, Executive Engineers of PWD (Roads), PHE, WR, Irrigation, Police, Fire & Emergency Services to take necessary measures as required for dealing with the situation	Deputy Commissioner
8	Deputy Commissioner will also inform State HQ about the prevailing situation and actions taken	Deputy Commissioner

TABLE NO-59
Response plan at District level

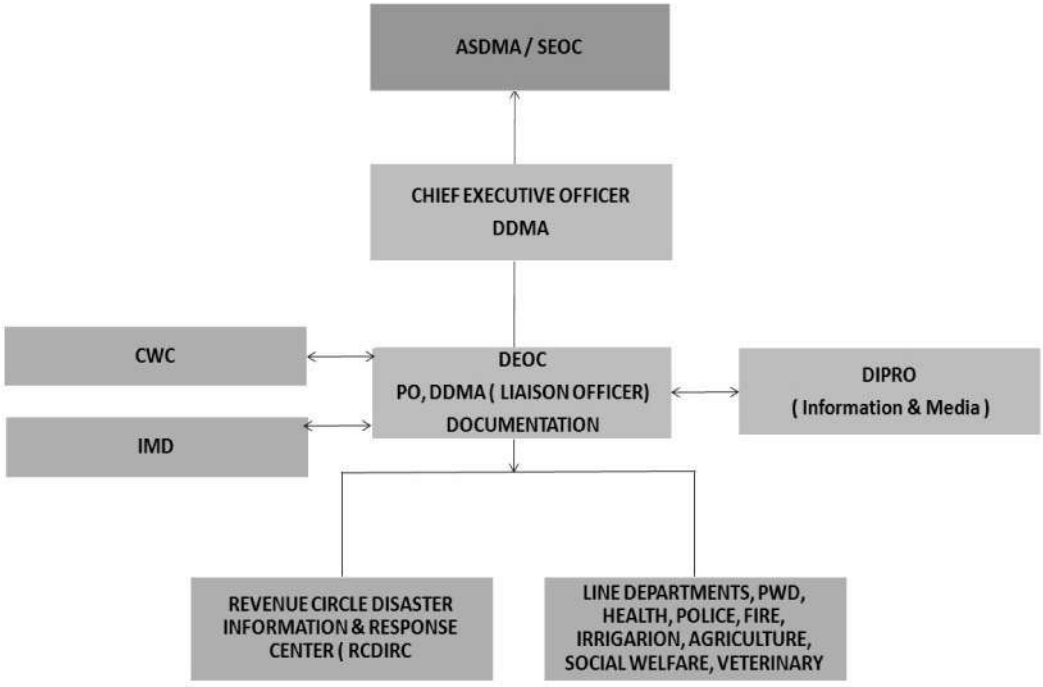
Sl.No	**Response at revenue circle level**	
1	On receipt of warning, mobilize the Lot Mondal, Gaon Burah, SDRF and other agencies and resources available under Circle Officer's jurisdiction	Circle Officers (COs) of the concerned Revenue Circle
2	Go to the specific location immediately and inform the villagers on the probability of any flood event and ask them to take necessary precautionary measures	Lot Manadal and Gaon Burah, Field Officer (Disaster Managment)
3	In case of probability of high intensity flood, evacuation of people from vulnerable areas to pre-identified safe locations and preposition of quick Response Team/SDRF/NDRF/Police Force/Sand Bags/ Boats/Tarpaulin/ Tents)	Circle Officers (COs) of the concerned Revenue Circle, Inland Water Transport (IWT) Dept.
4	Keep DC/SDO (Civil) informed on an hourly basis about the situation on the ground level and may request additional resources of man, material and machines if required from DC or SDO (Civil)	Circle Officers (COs) of the concerned Rev. Circle
5	**Inform:** Block Development Officer (BDO), so that BDO can inform PRI representatives for appropriate action GP Secretary and GP President for appropriate action	Circle Officers (COs) of the concerned Rev. Circle
6	Open Relief Camps if required and give requisition for GR to DC	Revenue Circle Officer
7	Arrange for distribution of Relief	Revenue Circle Officer

Coordinated IEC activities should be initiated well in advance.

- Mock drill of preparedness should be carried out twice in a year. The mock rehearsal should start from the Control Room. This will help in finding out the preparedness level for the district level functionaries.
- Make separate plan of operation and list of required materials, tools machineries for each kind of disaster.

- Train the rescue forces with the equipments and specialize them for the different types of disaster by the experts.
- Train the Panchayat leaders / village volunteers/ Villagers for helping the affected people for the disaster of their concern.
- Half yearly review the stock of men, materials, and machineries of all lined departments.
- Approach to NDMA and ASDMA for any kind of assistance to the line departments for upkeepment of their machineries and strengthening the resources.
- Warning system through Police Control Room (24x7) DDIPR/AIR/DIO.
- The Incident Command Officer shall organize regular coordination meeting with all DM Committee Members, Head of office, Public leaders, NGO and senior citizen in consultation with the Chairman.
- The Incident Command Officer will liaise with all Head of office, NGO, Public Leaders and other organizations to keep their machineries and manpower in readiness to face occurrence of any type of natural disaster.
- The Incident Command Officer shall keep record of all parameter which might
- Indicate occurrence of any type of natural disaster and intimate the concerned higher authority in weekly / daily basis.
- The RRTs (Medical & Police) will be alerted by the Incident Command Officer.

Flow chart showing the directional of information flow at DEOC



10.6 Relief Plan

10.6.1 During the Disaster.

Disseminate the warning of disaster from DEOC / DIPRO to all concerned destination in single attempt by using mass sms, announcement through radio, through mass voice mail and ask the people who are likely to be affected, to take shelter in safer places.

Immediate deploy the forces to clear the route of search & rescue and also to clear the traffic from the route of rescue.

Command to the forces, NGO, SHG & volunteers to rush immediately to the affected area for search and rescue with all pre-enlisted tools and equipments for disaster.

During the time of occurrence of disaster, the Nodal Officer shall liaise with all Head of office, Public Leaders and others organizations and initiate prompt measures to prevent loss of human lives and property damage.

The Nodal Officer shall initiate immediate necessary measure for evacuations, organize Search and Rescue teams with consultation with the concerned Member which have been entrusted to this work.

If necessary, the Nodal Officer will initiate setting up of Relief Camp for the affected people in a safer place and ensure proper supply of safe drinking water, electricity, medical facilities and rations etc. with the help of concerned departments to the relief camp.

10.6.2 Post Disaster:

A Post- disaster evaluation should be done after the withdrawal of relief and rehabilitation activities in order to assess :

- The nature of state intervention and support,
- Suitability of the organizational structure,
- Institutional Arrangements,
- Adequacy of Operating Procedures,
- Monitoring mechanism,
- Information tools,
- Equipments,
- Communication System, etc.

The impact studies on the aforesaid operations for long term preventive and mitigation efforts are to be undertaken. Evaluation exercises may be undertaken to understand the perceptions about disaster response in terms of :

- Adequacy of training
- Alert and warning system,
- Control Room functions,
- Communication plans,
- Security,
- Containment,
- Recovery procedures,
- Monitoring

10.6.3 Relief and Rehabilitation Plan for Flood

TABLE NO-60
Relief and Rehabilitation plan for Flood

Sl.No	Flood	Action to be taken
1	**Pre-Flood**	Maximum number of relief centres likely to be set up Facilities to be available at each centre • Maximum likely number of relief parties The way individuals and voluntary organizations are to be associated with the relief teams. • The way Panchayats will be associated with relief operations. Divide the district into compact zones each comprising a group of villages falling under both 'very vulnerable' and 'vulnerable' areas as classified in DDMP and each such zone shall be serially numbered Select sites for evacuation centres and relief centres in safe areas. The site for sheltering livestock may be decided in consultation with the district A. H. & Veterinary officer. In selecting sites, preference shall be given to high lands, schools, marketplaces, and places not likely to be inundated. • Make a rough estimate of requirements Prepare • A sub-division wise list of officers and staff available for deployment of relief duty as and when called for. • A list of jeeps, buses, trucks and other vehicles for requisition in case of necessity, in consultation with the D.T.O;
2	**During Flood**	DDMA will conduct weekly meeting to review flood management during the flood season. On receipt of flood warning D.C will: take action as per Standard Operating Procedure (SOP) prepared by the State On occurrence of Flood the DC will: visit the places of occurrence, ascertain the nature and extent of flood and make prompt operational decisions, ADC (Relief) will arrange proper distribution of relief articles received as donation in kind among the deserving affected people through the official and non-official agencies • Circle Officer will arrange for taking care of the infirm, destitute, orphans, children, and expectant/nursing mothers in the relief centres through the assistance of the distribution social welfare officer.
3	**Post Flood**	DDMA will collect agricultural statistics from the revenue staff and the district agricultural officer about areas under crops affected by flood, damage to crops and the number of cultivators involved. • After the flood recedes, a report on losses and damages of each area needs to be submitted the Government in the Revenue & Disaster Management Department in the form as given in Appendix X of Assam Disaster. • Generally, full pictures of relief measures will emerge as soon as the waters have subsided. In declaring closures of relief operation, it will take the approval of the DC and inform all concerned.

10.6.4 Recovery

In the unfortunate event of a natural calamity like a cyclone or flood its important focus on the methods and activities to restore lifeline support physical infrastructure like adequate water supply, power and communication networks, accessibility to the site. These must be the described in the disaster management plan- relief & recovery part..

In the District, the Nodal agency plays direct and active role in relief. The Deputy Commissioner office either directly or through assistance will inform to the nearest police stations, WT stations, administrative officers and nodal agencies at Circle, Sub-Divisional and Dist. HQ by quickest means. For

timely assistance to the people affected by natural disasters it is necessary to have correct assessment of extend of damage to crops, public & private properties and loss of human lives and livestock. The emergency relief measures and relief measures in the aftermath of a disaster is generally carried out in compliance with Calamity Relief Fund Norms by Deputy Commissioner.

The task force is responsible for collecting the extend of the damages with respect to number of houses damaged, loss of human lives, number of person injured, information about individual families, their income, property and assets. The zonal officer has to prepare a report on the same to be sent to the Deputy Commissioner. The mentioned assessment is to be carried out on priority basis so that the Nodal Department in the district Region which is the Department of Disaster Management can extend relief assistance in time in order to mitigate the effect of the natural disaster.

10.7 Department roles and responsibilities

10.7.1 Police department:

In order to achieve smooth and orderly evacuation of human lives and properties the district Police Department has to play vital role. The Police Department will keep close liaison with Deputy Commissioner/ Addl. Deputy Commissioner (Disaster Management) and the District Emergency Operation Centre (DEOC). The Superintendent of Police will chalk out action plan forming different zones and sectors with Police Zonal & Sector Officers for smooth conduct of rescue and relief operation. The Zonal and Sector Police Officer will keep close liaison with the District Headquarter as well as concerned departments like Fire Service, Civil Defence, Health, Army & Paramilitary, Air Force, Transport, and ensure the following tasks.

- Visit the affected areas and keep informed through wireless system/ telephone etc. about the up-to-date status of the affected areas and prompt actions to be taken for rescue and relief operations.
- Take adequate care for maintaining law & order. They also assist the Civil Adminisration in times of Disasters
- Round the clock vigil of the area including the high and vulnerable buildings and ensure rescue operations at every affected areas/houses
- Requisition of services of Civil Defence, Homeguards/VDPs and other military/ paramilitary forces in rescue operations 21
- Provide assistance to the community for shifting of affected and injured persons to the health camp for medical treatment.
- Extend support to Fire & Emergency Services in controlling fire incidents and security to individuals and public properties
- Establish emergency communication system
- Extend support to Civil Administration in management of dead

10.7.2 Fire & Emergency Service

Fire (natural as well as manmade) is one of the major disasters that causes loss of human lives and property. Sometimes not because of earthquake, but because of fire people lose their lives.

Ensure that proper fire fighting precautions has been taken while issuing permission for construction of buidings.

Make sure that smoke detectors/ fire fighting equipment are installed in all important places like Govt. offices/ schools/ colleges/ cinema halls/ industrial units and other installations where the people gather in large number. Also train up employees about the techniques of using fire fighters

Make sure that sufficient number of fire tenders with all equipments in working condition are available round the clock.

Train up/ Motivate people how to use fire fighters and its advantages.

Carry out Fire Mock Drill in schools/ public places/ apartments etc. to raise public awareness.

10.7.3 State Disaster Response Force Services

Sometimes not because of fire, but because of flood/earthquake etc. people lose their lives. SDRF People will be in alert mode with all lifesaving equipmets/ boat and extend their services as and when required. The will work under the command and control of Sr. Station Officer, Tinsukia Fire & Emergency Services Station.

10.7.4 Civil Defence & Home Guard:

For effective operation, works of various services, personnel must have proper training and discipline with a view to achieve this intensive training with special reference to the earthquake disaster should be arranged to train up the volunteers and 23 other related personnel as well as the public. The efficiency in performance of the various services depends highly upon the amount of training imparted to them. In Civil Defence towns, training with special reference to earthquake are already introduced in educational institutions. It is suggested to conduct some exercises by Civil Defence department, in the rural areas to enlighten the public and students for their action and part played in a disaster. Civil Defence Department will keep a register of trained volunteers so that their services can be utilized in disaster relief operation in respective service. The Deputy Controller of Civil Defence, Tinsukia will properly maintain the equipments necessary for conducting rescue operation to extricate the casualties trap from under debries. He will also ascertain the resources of manpower and materials available with the local Agencies like Home Guard, and other Local voluntary organization such as Indian Red Cross Societies, N.C.C., and Scouts & Guides Etc. Civil Defence and Home Guard, Tinsukia will have to prepare a separate contingency plan for this purpose. They need to spare sufficient numbers of Home Guards for emergency operations as and when called for.

10.7.5 Health Department:

The Health Department will make necessary arrangements for blood banks and other lifesaving emergency services. All Hospitals and Private hospital should be on alert. One senior Doctor for emergency duty should be detailed on a round-the-clock basis in the Casualty Ward in these Hospitals. Ambulances with life savings drugs need to be kept in readiness. An inventory of all private ambulances should be prepared along with the names of the drivers and their contact phone numbers.

Provide health and medical care in normal and disaster situations.

Develop adequate health infrastructure in the district and implement programmes towards improvement of health across all sections of the society.

Conduct vulnerability assessment of all health facilities across the district and undertake preparedness and mitigation measures.

- Render immediate medical service and transport casualties to hospitals
- Activate Hospital Disaster Management Plan including mass casualty plan
- Prioritize patient management; Activate triage system as per the established protocol
- Set-up relief camps from District to PHC Level, Medical Colleges.
- Establish a base for field hospitals along with basic/support services
- Maintain Ambulance network
- Establish network among medical practitioners/ health institutions to facilitate quick mobility of Doctors and masscasualty management
- Ensure that emergency communication is functional at all times, including medical services (pharmacy, blood bank, paramedics, ambulance services)
- Conduct training to Hospital Administrators, Doctors, Nurses, Paramedics, and other staff
- Work towards developing a cadre of volunteers trained in basic first-aid
- Provide support in recovery operations
- Carry out impact assessment on health infrastructure
- Provide support to line departments in Recovery and Rehabilitation efforts of the communities
- Provide expert counselling/psychosocial support to disaster survivors
- The Civil hospital, Tinsukia wiil keep few beds ready for treatment of the referred cases. He will help with manpower and medicines, vehicles and voluntary Blood Donors.
- Document actions taken by the department and incorporate lessons learnt in the sector plan.

10.7.6 Public Works Department:

Structural safety of all existing RCC, Steel and masonry buildings needs to be assessed with regards to its safety against potential hazards like earthquake, floods, fires and accidents. The PWD (Bldg.) division has to prepare and provide checklist for regulatory and development authorities.

The PWD (Bldg.) division has to identify vulnerable buildings for seismic safety in compliance with Govt. of India guidelines. They has to create, compile and maintain a database of all weak structures (Govt./ Non-Govt. and lifeline buildings) and provide technical support for the corrective measures to follow like retrofitting/demolishing of such structures.

The PWD (Bldg.) division will provide technical assistance to the DDMA for enforcing BIS codes as applicable in the district. The DDMA may take necessary actions against deviation/ violation of such resistive measures.

PWD (NH) & PWD (State Roads) will make an inventory of the machineries like Bulldozers, Excavators, Cranes etc. necessary for restoration of roads.

Construction and repair of roads, bridges, culverts in the district.

The departmental Engineer should keep vigilance on the NH and all other important road during and immediately after the earthquake and take immediate measures to clear the blockade found anywhere using the required machineries like bulldozers etc.

• Preposition emergency supplies and equipment/tools in high-risk concentration areas

• Establish mitigation funds within the department.

• Undertake damage assessment of lifeline infrastructure; Prepare estimates and undertake repair/ strengthening works; Supervise the civil work activities and ensure safe construction practices are streamlined during Recovery/Reconstruction phase.

• Conduct training for staff in latest advancements of engineering, demolition techniques, health monitoring of infrastructure assets, seismic strengthening and retrofitting, critical infrastructure protection.

10.7.7 Public Health Engineering Department:

Water born diseases are one of the major reasons of increasing the number of death after any disaster. Providing purified water to the affected people is a challenge. The PHE department plays a vital role in this regard. Checklists for this department are as follows,

The PHE department, Tinsukia will have to keep sufficient stock of water purification materials like bleaching powder, alum and lime etc. for carrying to the area where necessary and depute their field staff whenever disaster situation claims.

The PHE Engineer staff will keep in constant touch with the Zonal Officers during and after the disaster.

Ensure safe hygiene through Total Sanitation Campaign (TSC). Motivate the people to exercise proper disinfections and hygiene practices for drinking water and taking food.

Undertake risk assessment and management of ground water resources in emergency situations.

10.7.8 Water Resources Department:

The Water Resource Department will assess and make a list of vulnerable dykes and keep close eye on these areas. Accordingly, they will have to prepare contingency plan to meet any emergency. The Executive Engineer is to check regularly the condition of the sluice gates and do necessary rectifications, if any, so that stagnant water can be discharged effectively. He is responsible for deploying officials/ experts along the dyke/ bundh etc. during the flood period at the vulnerable points and send their contact numbers to DDMA and zonal officers. The WR Department has to keep sufficient number of empty gunny bags, sand and other facilities in the vulnerable reaches. In addition to this they have to deploy strict vigilance over all the major embankments round the clock.

10.7.9 Irrigation Department

The Executive Engineer is to keep sufficient nos. of portable pump sets ready on 24x7 hourly basis. He will arrange sufficient manpower and assign duties likewise.

10.7.10 Transport Department:

Proper maintenance/cleanliness of roads during disaster is an important task so that rescue/relief operations, transportation of essential goods & manpower are not affected. A checklist for Transport Department is as under:

The DTO Tinsukia will keep list of owners with contact details of all type of vehicles Excavators, Bull-dozers, Cranes. Recovery Vans Tractors, buses, trucks etc. which can be arranged immediately during and after any disaster. A copy of the same is to be made available to the District Disaster Management Authority.

Arrange vehicles for transport of people and relief supplies, navigation aid.

The Transport Department will have to prepare an Action Plan for supply of the all type of vehicles when required. The DTO would have to keep liaison with the DEOC.

Take up awareness program for road safety (Accident prevention).

10.7.11 Food and Civil Supplies Department

They are responsible for proper and quick distribution of Civil Supplies at the time need. They will ensure procurement of essential commodities (controlled & noncontrolled) and maintain buffer stock of sufficient quantities to be released during necessity. They are also to issue instructions to the Roller Flour Mills to keep rolling stock of wheat bran/ rice barn and send regularly a list displaying availability of these 28 items. The F&CS department has to keep constant vigil so that traders do not take advantage of the situation creating artificial scarcity of commodities and inflate prices.

10.7.12 Veterinary Department:

Disaster causes death and injury to animals also. The veterinary Department with the assistance of NGOs/ volunteers working in this line will organize in such a way that can expeditiously take steps for rescue of seriously injured animals and disposal of dead animals also. District Veterinary Officer will assess requirement of equipment's and other veterinary staff, medicines vaccines disinfectants etc. and prepare an Action Plan to combat the possibilities of injuries and epidemics etc. They will conduct assessment of damage and economic loss due to disasters within the sector.

10.7.13 Agriculture Department:

During flood/draught, loss to seasonal crops is considerable. The Agriculture Department is entrusted with provide necessary technical support to the district administration.

Establish coordination in implementing and providing technological know-how on drought management to the farming community through agricultural extension services.

Continue educating farmes on soil and water conservation technologies through implementation of watershed projects and know-how of drought resistant crops.

The Agriculture Department will make an assessment of acreage under crops and number of cultivators to be affected in each of the areas.

They need to assess the requirement of seeds, seedlings, manures etc. for grants, tools and plants for emergency relief works.

They have to advice on the suitable cropping pattern. Arrange for spraying of pesticides wherever necessary.

Make sufficient stock of seeds, manures, implements etc. and make arrangements for raising seedlings.

Arrange distribution of agricultural inputs in consultation with the district administration.

Render technical support to the needy cultivators for salvage and protection of surviving crops.

Repair the damaged tools and plants.

10.7.14 Social Welfare Department:

During any disaster the weakest & neglected section of the community viz. women, children, senior citizens, physically handicapped suffer the most. It is the responsibility of our society to protect them.

The Social Welfare Department has to make arrangement for mobile maternity and child welfare centres wherever necessary.

Access the requirement of baby food etc. and arrange them. They have to extend help for taking care of orphan & mother, and the sick.

Maintain in directory of all social welfare organizations located in the district and made it available to the DDMA.

• Alert personnel for floods on receipt of warning and kept constant touch with the district administration All heads of the Departments/Offices will keep constant touch with the District Officials/Disaster Emergency Operation Centre at DC's office. Every department will have to prepare separate Action Plans showing the Standard Operating Procedures (SOPs) to be adopted on emergency and Resource Inventory (human & material) and made it available with the DDMA, Tinukia.

10.7.15 Inland water Transport

The Inland Water Transport Department is committed to ensure safe journey to the ferry commuters across the state and cargo transportation through inland waterways on the River Brahmaputra. The IWT also look into the fitness and safety measures in private boats. During the flood they play crucial role in providing relief material in chor areas. The IWT also made an inventory of local boats and create awareness among boats owner's and staff towards disaster preparedness.

10.8 City Disaster Mitigation Plan

The points mentioned above should be part of a larger city or region level disaster management plan. The Disaster Management Act, 2005 has brought a change from Response & Relief oriented approach to proactive and comprehensive approach. This has encouraged many Indian cities to develop and formulate a City Disaster Management Plan, the same should be worked for Tinsukia MPA as well to enable it to be better prepared in the case of natural disasters in the future. As part of the Master Plan 2041 the authority feels there is a need for a CDMP for the planning area covering the following general principles: -

- Risk & Hazard Assessment
- Planning
- Organization
- Resource Utilization
- Need for Specialist
- Training

Generally, the CDMP prepared for the planning area should include sectoral plans covering the following aspects of disaster & emergency management: -

- Overall Preparedness
- Rehabilitation

- Emergency Response
- Prevention
- Mitigation
- Recovery
- Reconstruction
- Capacity Building Plans

Based on the above discussed general principles a detailed City Disaster Management Plan (CDMP) for Tinsukia Planning Area have to be prepared for strengthening the institutional mechanism.

TABLE NO-61

ANNEXURE-I

Actionable points for various line departments

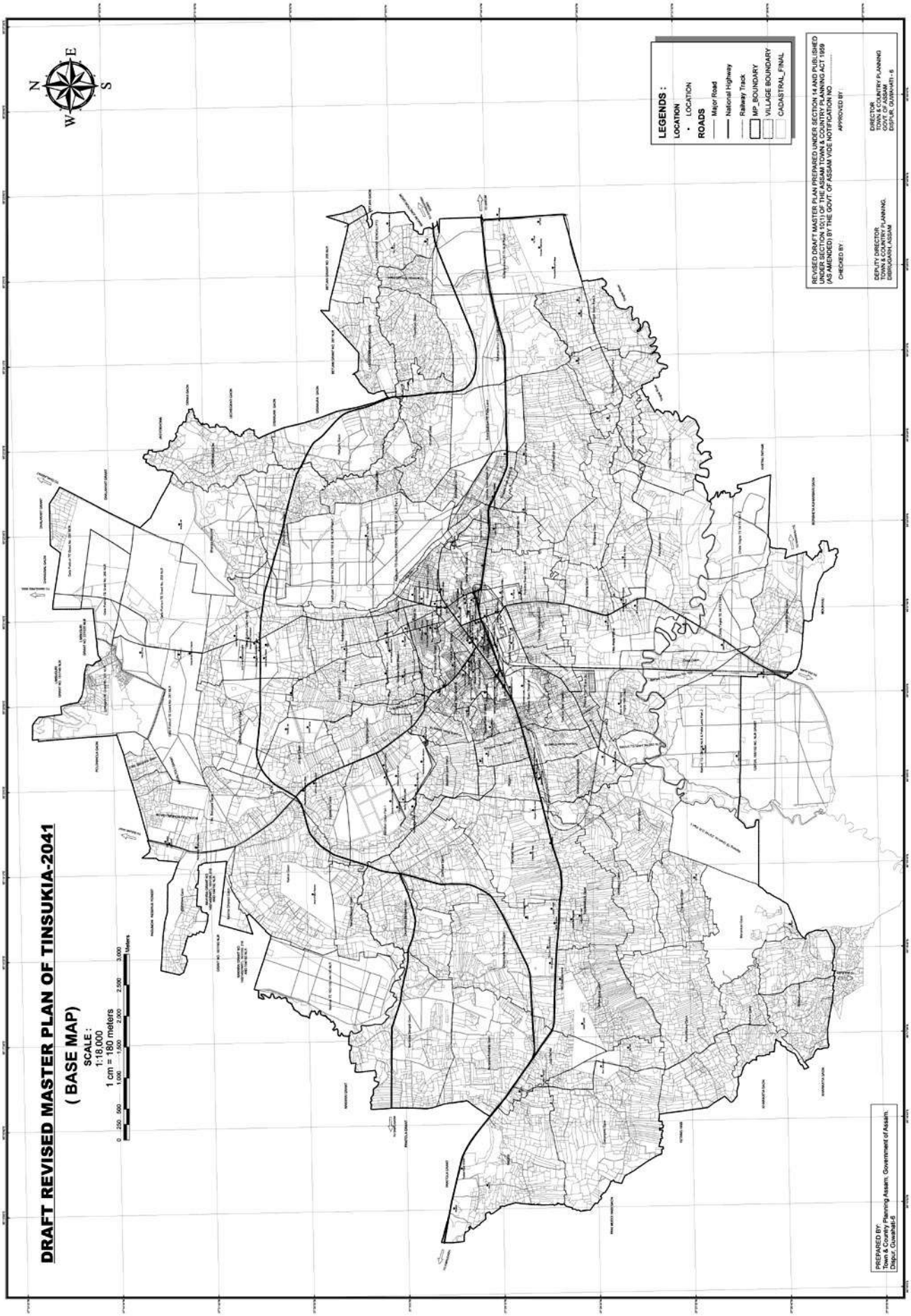
Sl. No.	Name of line Department/Agency/	Proposal	Action to be under taken towards implementing proposal
1	Tinsukia Municipal Board / Town & Country Planning / Tinsukia Dev. Authority	Affordable Housing Scheme, Solid Waste Management, Construction of vendor & Hawker Market, Bus Stand & Parking, ISBT, ICC, Neighborhood Centre /RLDS	Line department shall prepare concept paper / DPR whichever is applicable as per directive of the government for consideration of funding under 10% pool fund, NLCPR, NEC, State Finance Commission, CSR Fund of Pvt. Sector etc. in a phased manner during the Master Plan period i.e. up to 2041. A few selected schemes like housing colony can be considered under PPP mode.
2	Public Works Department &Tinsukia Municipal Board	Footpath & cycle Track Road signage in roads and in accident prone area Road Signage & Street Furniture, Fly over	
3	ASEB &Tinsukia Municipal Board	Improvement of street lighting	
4	Public Administration and Tinsukia Municipal Board	Smart City, Integrated Administrative Block	
5	Public Works Department / NH	Widening of Road, Rotary & Traffic Island	
6	Tinsukia Municipal Board and Town & Country Planning Assam	Development of Drainage system	
7	Tinsukia Municipal Board and Public Health Engineering Department	Improvement of sanitation	
8	PHE Department & Assam Urban Water Supply and Sewerage Board	Water Supply Scheme	
9	Education Department, NGO and Private Agency	Education Facilities	

10	Health Department, NGO and Private Agency	Health Care Facilities	
11	Sports & Youth Welfare Department & Sports Association	Development of playground and construction of stadium	
12	Social Forestry, Tinsukia Municipal Board, Public Administration and NGO	Protection & Conservation of environmentally friendly zone	
13	Social Forestry Department	Roadside Plantation & Urban afforestation	
14	Agriculture Department	Urban Agriculture & Organic Farming	
15	Fire Service	Up - gradation of State Fire Service	
16	Transport & Railway Department	Transit Zone, Shifting of Railway track, Fly over,Logistic Hub	
17	DICC	Industrial Estate	

ABBREVIATIONS

ANUABR	Assam Notified Urban Area Building Rules – 2014
AUW&SB	Assam Urban Water &Sewerage Board
A.R & T.C	Assam Railways & Trading Company
ASTC	Assam State Transport Cooperation
AT	Assam Trunk road
ASDMA	Assam State Disaster Management Authority
APDCL	Assam Power Distribution Company Ltd.
CPHEEO	Central Public Health and Environmental Engineering Organization
CT	Census Town
CDMP	City Disaster Management Plan
CRC	Central Relief Commissioner
DDMA	District Disaster Management Authority
DC	Deputy Commissioner
DEOC	District Emergency Operation Center
DIPRO	District Information & Public Relation Officer
DPR	Detail Project Report
ESR	Elevated Service Reservoir
GIS	Geographical Information Centre
GNP	Gross National Product
GDP	Gross Domestic Product
KKHSOU	Krishan Kanta Handique State Open University
MLD	Minimal Liquid Discharge
MSWM	Municipal Solid Waste Management
MRF	Material Reuse Facility
NH	National Highway
NEC	North Eastern Council
NGO	Non Government Organisation
NAAC	National Assessment and Accreditation Council
NDMA	National Disaster Management Authority

NLCPR	Non Lapsable Central Pool of Resources
OG	Out Growth
PPP	Public Private Partnership
PMAY (U)	Pradhan Mantri Awas Yojana- Urban
RLDS	Residential Land Development Scheme
IRC	Indian Road Congress
IOC	Indian Oil Cooperation
IGNOU	Indra Gandhi National Open University
IMD	Indian Metrological Department
IEC	Information Education Communication
SOP	Standard Operational Procedure
SDO	Sub Divisional Officer
SDRF	State Disaster Response Force
SHG	Self Help Group
SC	Schedule Caster
ST	Schedule Tribe
SBM	Swachh Bharat Mission
SWM	Solid Waste Management
TOD	Transit Oriented Development
TPS	Town Planning Scheme
TDA	Tinsukia Development Authority
TMB	Tinsukia Municipal Board
TMPA	Tinsukia Master Plan Area
URDPFI	Urban and Regional Development Plans Formulation and Implementation
ULB	Urban Local Body
VLMCC	Village Land Management and Conservation Committee Members


DRAFT REVISED MASTER PLAN OF TINSUKIA-2041
(BASE MAP)
SCALE :
1:18,000
1 cm = 180 meters
Meters
LEGENDS :
LOCATION
LOCATION
ROADS
Major Road
National Highway
Railway Track
MP_BOUNDARY
VILLAGE BOUNDARY
CADASTRAL_FINAL
N
S
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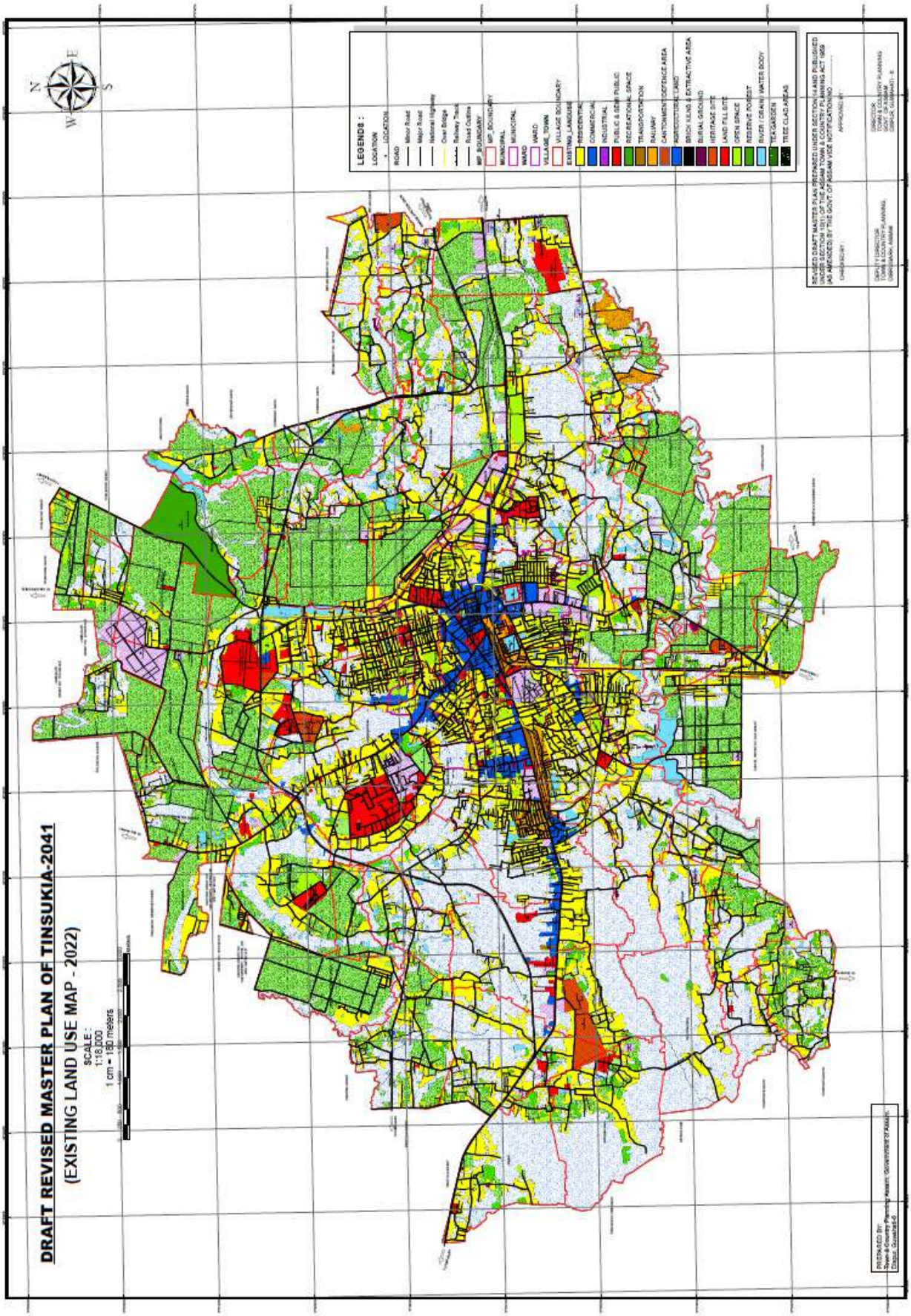
REVISED DRAFT MASTER PLAN PREPARED UNDER SECTION 14 AND PUBLISHED UNDER SECTION 15(1) OF THE ASSAM TOWN & COUNTRY PLANNING ACT, 1959 (AS AMENDED) BY THE GOVT. OF ASSAM VIDE NOTIFICATION NO.
CHECKED BY :
APPROVED BY :
DEPUTY DIRECTOR
TOWN & COUNTRY PLANNING,
BRAHMAPUTRA ASSAM
DIRECTOR
TOWN & COUNTRY PLANNING
GOVT. OF ASSAM
DISPUR, GUWAHATI - 6
PREPARED BY:
Town & Country Planning Assam, Government of Assam.
Dispur, Guwahati-6


DRAFT REVISED MASTER PLAN OF TINSUKIA-2041
(EXISTING LAND USE MAP - 2022)
SCALE :
1:18,000
1 cm = 180 meters
LEGENDS :
LOCATION
ROAD
Minor Road
Major Road
National Highway
Over Bridge
Railway Track
Road Outline
MP_BOUNDARY
MUNICIPAL
WARD
VILLAGE_TOWN
VILLAGE BOUNDARY
EXISTING LANDUSE
RESIDENTIAL
COMMERCIAL
INDUSTRIAL
PUBLIC & SEMI PUBLIC
RECREATIONAL SPACE
TRANSPORTATION
RAILWAY
CANTONMENT/DEFENCE AREA
AGRICULTURAL LAND
BRICK KILNS & EXTRACTIVE AREA
BURIAL GROUND
HERITAGE SITE
LAND FILL SITE
OPEN SPACE
RESERVE FOREST
RIVER / DRAIN/ WATER BODY
TEA GARDEN
TREE CLAD AREAS
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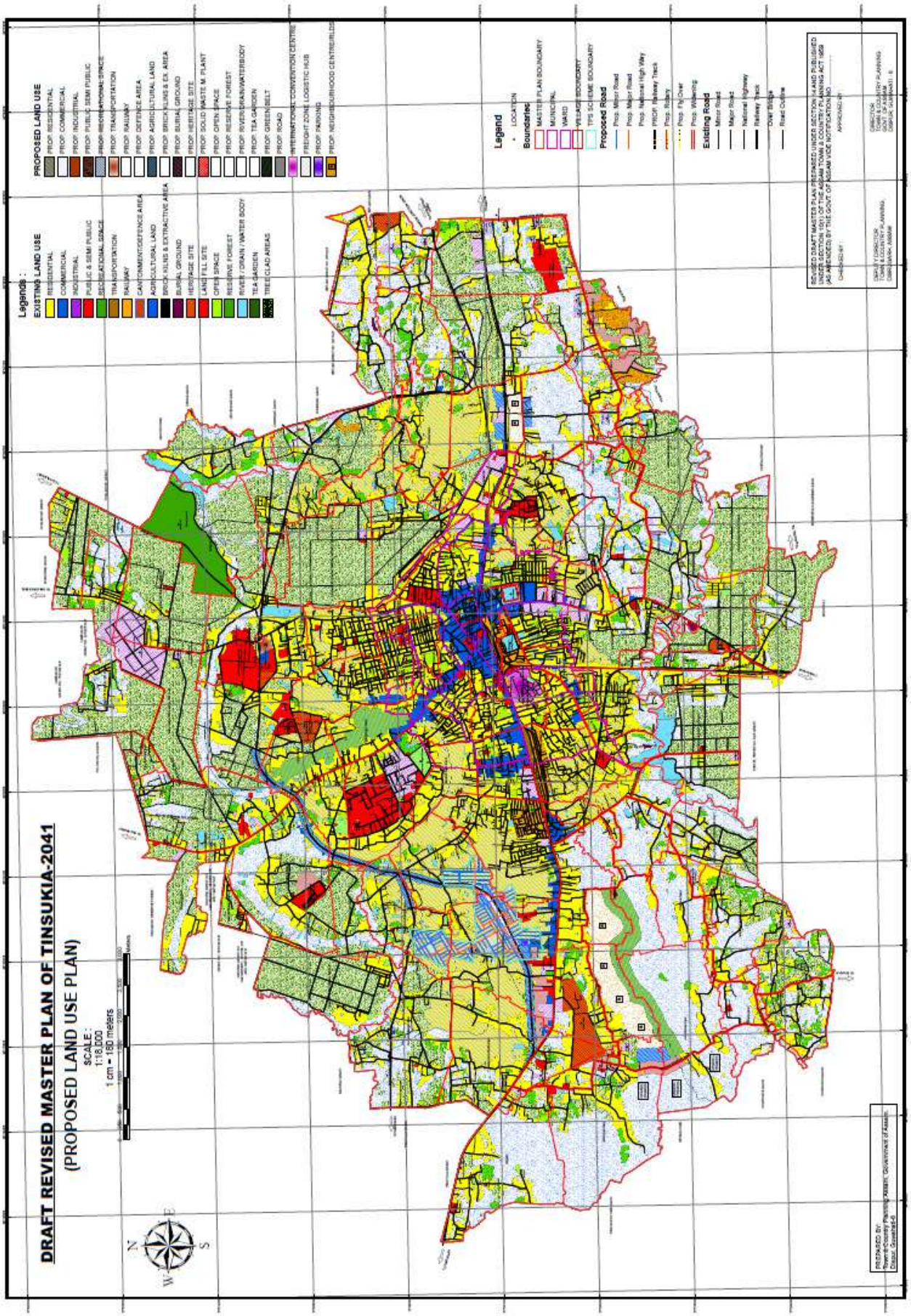
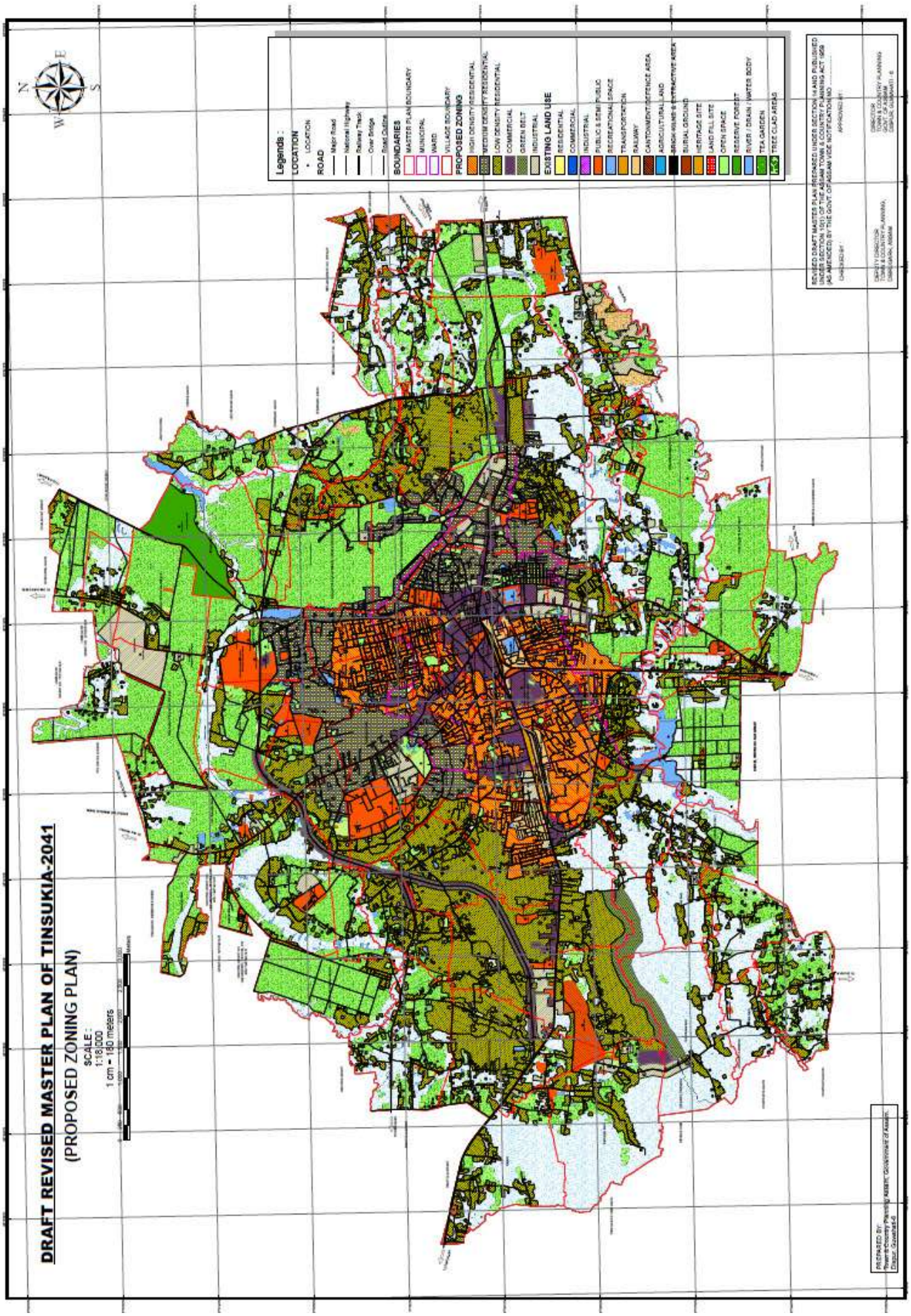
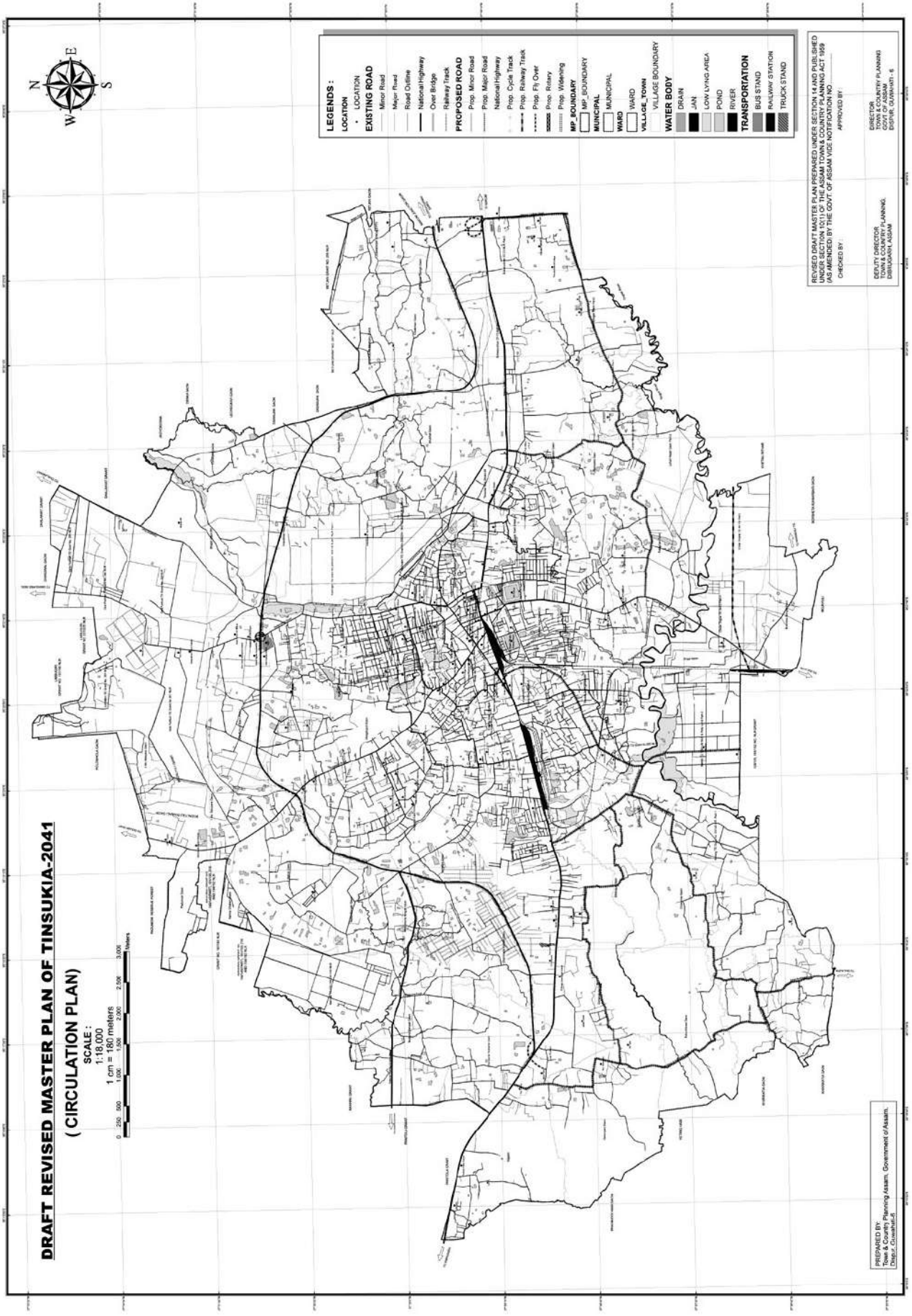
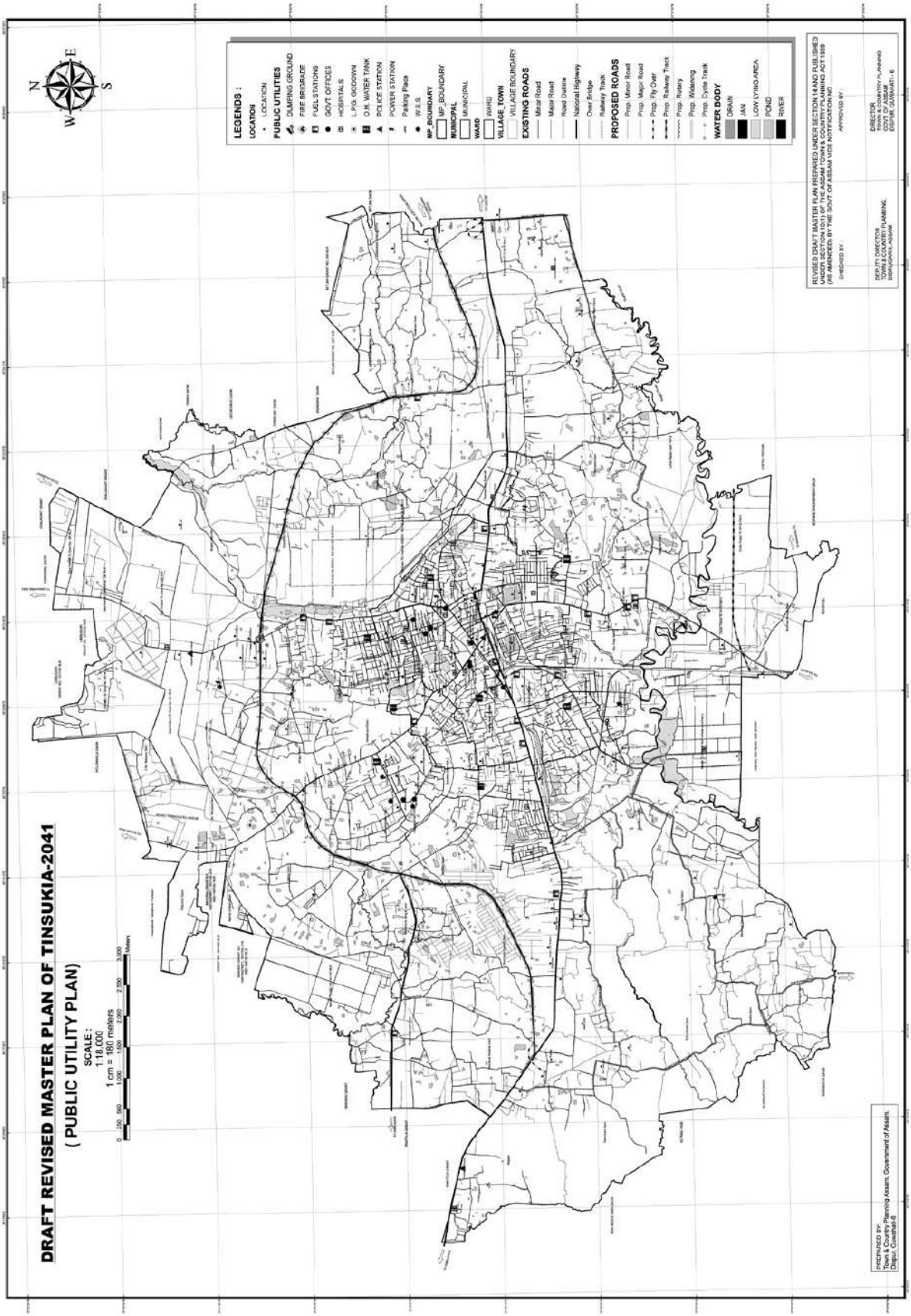

DRAFT REVISED MASTER PLAN OF TINSUKIA-2041
(PROPOSED LAND USE PLAN)
SCALE :
1:18,000
1 cm = 180 meters
Legends :
EXISTING LAND USE
RESIDENTIAL
COMMERCIAL
INDUSTRIAL
PUBLIC & SEMI PUBLIC
RECREATIONAL SPACE
TRANSPORTATION
RAILWAY
CANTONMENT/DEFENCE AREA
AGRICULTURAL LAND
BRICK KILNS & EXTRACTIVE AREA
BURIAL GROUND
HERITAGE SITE
LAND FILL SITE
OPEN SPACE
RESERVE FOREST
RIVER / DRAIN / WATER BODY
TEA GARDEN
TREE CLAD AREAS
PROPOSED LAND USE
PROP. RESIDENTIAL
PROP. COMMERCIAL
PROP. INDUSTRIAL
PROP. PUBLIC SEMI PUBLIC
PROP. RECREATIONAL SPACE
PROP. TRANSPORTATION
PROP. RAILWAY
PROP. DEFENCE AREA
PROP. AGRICULTURAL LAND
PROP. BRICK KILNS & EX. AREA
PROP. BURIAL GROUND
PROP. HERITAGE SITE
PROP. SOLID WASTE M. PLANT
PROP. OPEN SPACE
PROP. RESERVE FOREST
PROP. RIVER/DRAIN/WATERBODY
PROP. TEA GARDEN
PROP. GREEN BELT
PROP. ROAD
INTERNATIONAL CONVENTION CENTRE
FREIGHT ZONE, LOGISTIC HUB
PROP. PARKING
PROP. NEIGHBOURHOOD CENTRE/HUB
Legend
LOCATION
Boundaries
MASTER PLAN BOUNDARY
MUNICIPAL
WARD
VILLAGE BOUNDARY
TPS SCHEME BOUNDARY
Proposed Road
Prop. Minor Road
Prop. Major Road
Prop. National High Way
PROP. Railway Track
Prop. Railway
Prop. Fly Over
Prop. Widening
Existing Road
Minor Road
Major Road
National Highway
Railway Track
Over Bridge
Road Outline
REVISED DRAFT MASTER PLAN PREPARED UNDER SECTION 14 AND PUBLISHED FOR INVITING OBJECTIONS AND SUGGESTIONS UNDER SECTION 15 OF THE ASSAM TOWN AND COUNTRY PLANNING ACT 1959 (AS AMENDED) BY THE GOVT OF ASSAM VIDE NOTIFICATION NO.
CHECKED BY:
APPROVED BY:
DIRECTOR
TOWN & COUNTRY PLANNING
GOVT OF ASSAM
GUWAHATI - 8
DEPUTY DIRECTOR
TOWN & COUNTRY PLANNING
GOVT OF ASSAM
GUWAHATI, ASSAM
PREPARED BY:
Town & Country Planning Assam, Government of Assam
Status: Gazetted GIS
N
W
E
S


DRAFT REVISED MASTER PLAN OF TINSUKIA-2041
(PROPOSED ZONING PLAN)
SCALE :
1:18,000
1 cm = 180 meters
Legends :
LOCATION
ROAD
BOUNDARIES
PROPOSED ZONING
EXISTING LAND USE
REVISED DRAFT MASTER PLAN PREPARED UNDER SECTION 11A AND PUBLISHED UNDER SECTION 10(1) OF THE ASSAM TOWN & COUNTRY PLANNING ACT 1959 (AS AMENDED) BY THE GOVT. OF ASSAM VIDE NOTIFICATION NO .....
APPROVED BY:
DIRECTOR
TOWN & COUNTRY PLANNING
GOVT. OF ASSAM
GUWAHATI-781 006
DEPUTY DIRECTOR
TOWN & COUNTRY PLANNING
TINSUKIA, ASSAM
PREPARED BY:
Town & Country Planning Assam, Government of Assam,
Dispur, Guwahati-6


DRAFT REVISED MASTER PLAN OF TINSUKIA-2041
(CIRCULATION PLAN)
SCALE :
1:18,000
1 cm = 180 meters
0 250 500 1,000 1,500 2,000 2,500 3,000 Meters
N
E
W
S
LEGENDS :
LOCATION
LOCATION
EXISTING ROAD
Minor Road
Major Road
Road Outline
National Highway
Over Bridge
Railway Track
PROPOSED ROAD
Prop. Minor Road
Prop. Major Road
National Highway
Prop. Cycle Track
Prop. Railway Track
Prop. Fly Over
Prop. Rotary
Prop. Widening
MP_BOUNDARY
MP_BOUNDARY
MUNCIPAL
MUNCIPAL
WARD
WARD
VILLAGE_TOWN
VILLAGE BOUNDARY
WATER BODY
DRAIN
JAN
LOW LYING AREA
POND
RIVER
TRANSPORTATION
BUS STAND
RAILWAY STATION
TRUCK STAND
REVISED DRAFT MASTER PLAN PREPARED UNDER SECTION 14 AND PUBLISHED UNDER SECTION 10(1) OF THE ASSAM TOWN & COUNTRY PLANNING ACT 1959 (AS AMENDED) BY THE GOVT. OF ASSAM VIDE NOTIFICATION NO.
APPROVED BY:
CHECKED BY:
DEPUTY DIRECTOR
TOWN & COUNTRY PLANNING,
DIBRUGARH, ASSAM
DIRECTOR
TOWN & COUNTRY PLANNING
GOVT. OF ASSAM
DISPUR, GUWAHATI - 6
PREPARED BY:
Town & Country Planning Assam, Government of Assam,
Dispur, Guwahati-6



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